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STRATEGIC AND TACTICAL NOTES  
ON THE  
PROVINCE OF CHIANG-SU  
(NORTHERN AND SOUTHERN).

MILITARY RECORDS

GENERAL STAFF,

1910.

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**SECRET.**

**STRATEGIC AND TACTICAL NOTES**

**ON THE**

**PROVINCE OF CHIANG-SU**

**(NORTHERN AND SOUTHERN).**

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**GENERAL STAFF,**

**1910.**

These notes are supplementary to the military reports on  
the portions of province of Chiang-su respectively north and  
south of the Yang-tzü.

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| B | W.             | „ „ „                                    | Shanghai, <i>via</i> Hsiao-wan, I-ka-hang (Liu-chia-hang), and Tung-kou. |
| C | L.             | „ „ „                                    | Shanghai.  |
| D | L.             | Point one mile north of Kiu-toan Beacon. | Shanghai.  |
| E | W.             | Ts'a-ka-lu (Ts'ai-chia-lu) ...           | Shanghai.  |
| F | L.             | So-ka-lu (Ts'ao-chia-lu) ...             | Shanghai.  |
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# STRATEGIC AND TACTICAL NOTES ON THE PROVINCE OF CHIANG-SU (NORTHERN AND SOUTHERN).

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## CHAPTER I.

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### STRATEGIC.

*Causes for hostilities.*—Great Britain may be compelled to undertake military operations in China under any of the three following conditions :—

- (1.) For the protection of British subjects, and foreigners in general, in case of anti-foreign disturbance.
- (2.) In case of war, either with or without allies, against China.
- (3.) In fulfilment of treaty obligations guaranteeing the integrity of China.

In every case it is assumed that Great Britain has naval supremacy in the China Seas, since the force undertaking the operations must of necessity be brought to the scene in transports.

The Yang-tzü Region is of such great importance, owing to its immense resources and to the large British interests involved, that under either of the first two of the above conditions it may become the scene of hostilities, although in the event of war against China the main objective would doubtless be Peking.

The Yang-tzü, in the lower portion of its course, traverses the province of Chiang-su, which it divides into two portions, the northern and the southern. Situated on the river itself are the treaty ports of Nanking and Chinkiang, while on a tributary called the Huang-p'u stands Shanghai, the most important treaty port of the Chinese Empire. At all these places foreign communities are found. At the junction of the Huang-p'u with the Yang-tzü are placed the Wu-sung Forts, barring the approaches by water to Shanghai; up the main stream of the Yang-tzü the passage is defended by the fortifications at Kiangyin, Chinkiang and Nanking, all situated in the province of Chiang-su\*; while

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\* See "Military Report on the Defences of the Yang-tzü Region."

other treaty ports and fortifications are found yet further up the river, in the provinces of An-hui, Chiang-hsi and Hu-pei, the most important point being Hankow, which is over 400 miles in a direct line from Shanghai. Chinkiang is of strategic importance as being the place where the northern and southern sections of the Grand Canal join the Yang-tzü, although the value of the canal is less than was formerly the case, owing partly to the opening of railways, and partly to neglect which has allowed the depth of water to decrease. Nanking, with Pu-k'ou on the opposite bank, is perhaps the most important strategic point in the lower Yang-tzü Region, for besides being the seat of the Viceroy of the Liang-chiang, it is a large military station and the terminus of the Shanghai—Nanking railway. When the Tientsin—Pu-k'ou line is opened the importance of Nanking will be yet further increased, and it is therefore easy to conceive a situation in which it may become necessary to clear a passage to Nanking by force of arms, thereby making Chiang-su the theatre of operations.

To take in order the three sets of conditions under which hostilities may be conducted—

#### CASE 1.—THE PROTECTION OF FOREIGNERS.

*Objectives.*—Should an anti-foreign outbreak occur in Chiang-su it will obviously be impossible to succour all the small missionary communities scattered throughout the province; all that will be possible will be to render aid to the residents in the treaty ports, whither foreigners in the outlying districts must make their way.

*Possibility of relief.*—Shanghai is the only port in which it is possible to organize the defence on a scale sufficiently large to guarantee the foreign community against any probable danger. In the other treaty ports the situation of the foreigners must be precarious, for it is impossible to ensure that war vessels shall be available to proceed at once to their assistance, and the ascent of the Yang-tzü may be prevented by the batteries. The safest method would be for all foreigners in the threatened districts to embark in any foreign steamer which might be available, and to endeavour to reach Shanghai or the open sea.

#### CASE 2.—WAR AGAINST CHINA.

*Objectives.*—In the event of war with China it will be necessary to save the foreigners in the Yang-tzü Region, if possible; but the main objects of hostilities in Chiang-su will be to protect Shanghai and the large British interests there, and to prevent the great resources of the province in men, money and supplies from being utilized by the Chinese army in the north, since, as previously stated, the occupation of Peking is likely to be the chief aim. To this end the defences of the Yang-tzü must be reduced, the waterways and railway lines of Chiang-su will need to be controlled, and the important towns of Shanghai, Soochow, Chinkiang and Nanking must be occupied.

*Force which may be encountered.*—The following table shows the number of *Lu Chiin* \* troops which in November, 1908, could quickly be opposed to an invader operating in Chiang-su :—

|   |   |     | Number of combatants. |
|---|---|-----|-----------------------|
| At Ch'ing-chiang-p'u...                       | VII. Division ...                                     | ... | 4,500                 |
| „ Wu-ch'ang Fu, near Han-kow (Hu-pei) ...     | VIII. Division ...<br>21st Brigade of XI. Division... | ... | 10,500<br>4,500       |
| „ An-ch'ing Fu (An-hui) ...                   | Mixed Brigade...                                      | ... | 2,500                 |
| „ Nanking, Chinkiang and Kiangyin ...         | IX. Division ...<br>Mixed Brigade...                  | ... | 10,500<br>500         |
| „ Soochow ...                                 | 23rd Brigade of XII. Division                         | ... | 2,000                 |
| „ Hangchow (Chê-chiang)...                    | Infantry Brigade                                      | ... | 2,500                 |
| „ Nan-ch'ang Fu and Kiukiang (Chiang-hsi) ... | 27th Brigade of XIV. Division                         | ... | 4,000                 |
|   |   |     | 41,500                |

Of the above-mentioned places, Ch'ing-chiang-p'u is joined by the Grand Canal to the Yang-tzü at a point opposite Chinkiang; Wu-ch'ang Fu, An-ch'ing Fu and Nanking are on the Yang-tzü itself; Soochow is on the Shanghai—Nanking railway, roughly midway between Shanghai and Chinkiang; Hangchow is connected by the Grand Canal with Soochow, and by a railway with Shanghai; while another line is projected between Nan-ch'ang Fu and Kiukiang on the Yang-tzü. It should therefore be possible rapidly to assemble a strong force at almost any point near the Yang-tzü in the province of Chiang-su, whilst Chinkiang is unusually well situated for a concentration.

By calling out the reserves the numbers could be considerably raised, and in the course of years, as the reserves increase, the war strength of a division may approximate to the establishment of about 17,000 combatants, the strength of the brigades being proportionately increased. The total force of trained troops immediately available might therefore well amount to about one and a-half times the number shown in the table, or, say, 55,000 men.

In addition to the above, there are 4,000 men of the 25th Brigade, XIII. Division, at Ch'ang-sha Fu in Hu-nan, and 5,500 of the 29th Brigade, XV. Division, at K'ai-fêng Fu in Ho-nan. The Canton—Hankow railway is under construction between Ch'ang-sha Fu and Wu-ch'ang Fu, whilst a line already exists from K'ai-fêng Fu to Hankow. These troops could therefore soon reach the Yang-tzü at Hankow, and with the addition of reserves might total 15,000 combatants. At Chi-nan Fu in Shan-tung is stationed the V. Division. Under present conditions it would probably take a month for this division to reach the Yang-tzü, but when the Tientsin—Pu-k'ou railway is completed the transfer of the division to Pu-k'ou will be a matter of a few days, and it may add another 15,000 combatants to the total.

\* The Chinese Regular Forces.

If, however, Peking were threatened by an invader, it is most unlikely that the troops at Kai-fēng Fu and Chi-nan Fu would be allowed to move south, and it is more than probable that some of the units in the Yang-tzū might be summoned north to assist in the defence of the capital ; but if the Viceroy at Nanking were a man of strong character, and found his own provinces in danger of invasion, he would perhaps refuse to part with the men,\* and a hostile force operating in Chiang-su must therefore be prepared to encounter between 50,000 and 60,000 *Lu Chün*.

In addition to the above the provincial troops must be counted, although they are of small military value. In Chiang-su itself there were in November 1908 about 9,000 provincial troops, of which 3,000 were *I Chün* stationed at P'u-k'ou, these latter being a special force, better trained and armed than the local levies. The provinces of Chê-chiang and An-hui, which bound Chiang-su on the south and west, had respectively 12,000 and 5,000 men, making a total of 26,000 provincial troops which might be available in the Yang-tzū Region. Although not likely to stand against an attack by a disciplined force, these men would have to be reckoned with by the troops guarding lines of communication, as would also the numerous brigands, smugglers and pirates who infest the creeks and waterways of the Yang-tzū Delta.

*Occupation of Shanghai.*—In the event of military operations becoming necessary in Chiang-su, the first step, apart from any rapid naval action towards the relief of Europeans living up the Yang-tzū, must undoubtedly be the occupation of Shanghai. Here there are 4,500 British subjects owning very valuable property, and the large resources of the district in supplies and transport combine with the situation of the town as regards railway, river, and sea communications, to render Shanghai most suitable as a base of operations. One of the most important objects of the seizure of Shanghai will be the retention, so far as is possible, of the engines and rolling stock belonging to the lines radiating from the port, and for this purpose the blow should be struck swiftly, in order that the Chinese may not have the opportunity of withdrawing their rolling stock towards Nanking or Hangchow.

The question of the occupation of the International Settlement is, however, complicated by the necessity for avoiding friction with other Powers. The area occupied by Europeans at Shanghai is a *settlement*, and not a *concession* such as those at Tientsin, Hankow, and Canton, where a grant to foreign Powers has been made by a lease in perpetuity from the Government of China, and where the "land renter" holds under a title-deed which is issued by the foreign lessee-Power, and is registered only at the consulate of that Power. A *settlement* is a reserved area within which foreigners are permitted to reside, in which Chinese may continue to hold property, and foreigners acquire land by direct negotiation with the original owner. For such land a bill of sale is not issued, but it is

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\* The Viceroy has, however, no control over the troops at Wu-ch'ang, which is in Hu-peh.

held under a perpetual lease sealed and issued by the Chinese territorial authority, and this title-deed may be registered at any consulate. The International Settlement therefore still forms part of the Chinese Empire, and in case of war with China it might be occupied by any belligerent, while the Chinese would be under no obligation to consider it neutral territory ; to leave it ungarrisoned would be almost impracticable. Nevertheless it is possible that the action of other Powers might render it advisable to form the base outside the International Settlement.

The French Settlement should legally come under the same conditions as the International, but there is no doubt that the presence in their settlement of the troops of another nationality would be deeply resented by the French, and it would be impolitic to open the question.

It is also possible that the neutralization of Shanghai may be suggested by non-belligerent Powers desirous of maintaining their trade with the port, but such a step would allow the Shanghai arsenal to continue the work of furnishing the Chinese with arms and ammunition, and at the same time would prevent the invading Power from using the place as a base, so that the advantage would be almost entirely on the side of the Chinese.

*Lines of advance on Shanghai.*\*—The usual way of reaching Shanghai from the sea is to go by water up the Yang-tzū to Wu-sung, and thence up the Huang-p'u River, but this route will be barred by the Wu-sung defences, which should make it a very hazardous matter for ships, even if heavily armed, to attempt to force an entrance to the Huang-p'u. To silence the Wu-sung Forts, so as to admit of removing the mines from the channels, an attack from the land side would be advisable,† but the landing places and lines of advance will be considered here mainly with reference to Shanghai, since it is possible that the occupation of the city by a strong force, combined with a threat of naval action against the Wu-sung Forts, might lead to the surrender of those defences without fighting, and in any case Shanghai would form a convenient base from which to operate against them.

A landing may be made—

- (a.) On the sea coast east of Shanghai, either at the mouth of the Pai-lung-chiang Creek, almost due west of the Kiu-toan Light, or on the point of land jutting out about 1 mile north of the Kiu-toan Beacon, the distance to Shanghai being about 18 miles.
- (b.) On the right bank of the Yang-tzū above Wu-sung, between Liu-ho-k'ou and Tien-êrh-chai. According to the route taken, the distance to Shanghai may vary from about 40 to over 60 miles.
- (c.) At Cha-p'u, in the extreme north-east of the province of Chê-chiang.

\* See Map No. 2. Details of the landing places are given in Chapter III., and of the routes in the Appendix.

† See "Military Report on the Defences of the Yang-tzū Region."

(a) is undoubtedly the best. The distance overland to Shanghai is less than that from the other two points, and in the case of (b) the necessity arises for running up the Yang-tzü past the Wu-sung Forts. Although naval officers are of opinion that the operation is feasible, it must undoubtedly be attended by great risk, even at night, owing to the heavy guns in the works, to the presence of mines, and to the shifting nature of the channels. If, however, a land attack on the forts were the first aim, the troops could be placed on shore much nearer to their objective than if they landed on the coast to the east. Moreover, the difficulties of this course being greater than those of the other two, it is possible that the Chinese might be taken by surprise if troops were landed up the Yang-tzü, and it has the advantage that boats brought on board ship can proceed from the Yang-tzü to Shanghai direct, whereas they would have to *portage* over one or more sea-walls if the landing were made on the coast. As regards case (c), a landing by British troops was made at Cha-p'u in 1842, although no advance was made inland, the object of the landing being merely to deal a blow at the Manchu troops stationed in the town, which was then a flourishing seaport with a considerable garrison. The troops were afterwards re-embarked, and went by sea to Wu-sung. The distance from Cha-p'u to Shanghai is 63 miles. In every instance transport is likely to prove a difficulty, but in landings made up the Yang-tzü, or on the eastern coast, boats brought by the ships could probably be utilized, whereas in the case of a landing at Cha-p'u it would be necessary to find boats locally. Land transport is almost out of the question.

If a sudden descent on the Wu-sung Forts were to be attempted by landing parties from vessels which happened at the outbreak of hostilities to be lying in the Yang-tzü above Wu-sung, the landing places described in Chapter III. under case (b) would be those used.

In no case is the landing likely to be opposed by any large body of Chinese troops, most of whom are quartered far inland.

*Lines of advance on Nanking.*—The question of an advance overland against any of the fortified areas on the Yang-tzü, or in its vicinity, is affected to an unusual degree by the nature of the country, certain lines of approach being almost impracticable owing to the difficulty of manoeuvring in the maze of creeks and canals, although from a strategic point of view their adoption may appear very desirable.

So far as the province of Chiang-su is concerned, the twin towns of Nanking and Pu-k'ou may be taken as the ultimate goal of an invading force, but it will also be essential to occupy Chinkiang, to obtain control of the Shanghai—Nanking railway and the city of Soochow, and to garrison the country to an extent sufficient to ensure that raids shall not be made against the railway, and that vessels passing up and down the Yang-tzü shall not be interfered with. Chinkiang and Nanking may be reached in three ways—

- (i.) By sending a force in ships up the Yang-tzü.
- (ii.) By advancing from Shanghai along the Shanghai—Nanking railway.

(iii.) By landing on the coast of Northern Chiang-su, and moving across country against Kiangyin, Chinkiang, or Nanking.

It is assumed that Shanghai has been already occupied.

(i.) The first plan, that of sending a force up the river in ships, is much the simplest and should prove by far the quickest, but it has the disadvantage that the vessels must silence or run past the defences of Kiangyin before they can approach Chinkiang.\* The Kiangyin works are likely to be made more formidable, and it would appear that the best method of dealing with them will be to land a force at some suitable point down stream out of range, but within easy distance of the defences, and to make an attack from the land side while a naval demonstration distracts the attention of the defence. The 2,000 men of the 23rd Brigade at Soochow must here be reckoned with, as they may be found manning the defences, or may make an attack on the flank of the landing party. A brigade of the IX. Division is already in Kiangyin and Chinkiang. Chinkiang must be captured in a similar manner, and with its fall the way to Nanking will lie open; but it is probable that Chinkiang, centrally placed as it is, may be very strongly held, and the attack may here find a large proportion of the troops mentioned on pages 3 and 4 as being available for the defence of Chiang-su. With Kiangyin and Chinkiang in British hands it is unlikely that the excellent line of communication furnished by the Yang-tzü could ever be seriously threatened. Although bodies of Chinese troops might make occasional descents on to the Yang-tzü before the country had been garrisoned, it is not probable that they would have with them any artillery heavier than field guns, and they could not therefore interfere to any appreciable extent with the navigation of the river, while to drive them off should be a matter of no great difficulty, and might be left almost entirely to patrolling gunboats. The advantages of using the river itself as a line of advance are obvious. Whether the scheme can be carried out or not will depend on the possibility of capturing Kiangyin and Chinkiang.

*Approximate Distances.*

|                           |     |            |                 |
|---------------------------|-----|------------|-----------------|
| Wu-sung to Kiangyin ...   | ... | 90         | miles by river. |
| Kiangyin to Chinkiang ... | ... | 60         | " "             |
| Chinkiang to Nanking ...  | ... | 50         | " "             |
| <b>Total</b>              | ... | <b>200</b> |                 |

(ii.) The second plan is that of advancing from Shanghai along the railway to Nanking. By this means the necessity is avoided for engaging the river defences of Kiangyin, Chinkiang, and

\* For details of the defences of Kiangyin, Chinkiang, and Nanking, see "Military Report on the Defences of the Yang-tzü Region."

Nanking, since they can all be attacked from the land side; in fact, unless the garrison of Kiangyin were of a strength sufficient to make it a menace to the railway, the place might be ignored until conditions were favourable for its reduction. If, however, naval co-operation were desired for the attack on Chinkiang, it would be necessary to detach a force to capture Kiangyin and thereby free the Yang-tzü for the passage of war vessels as far as Chinkiang.

Owing to the network of creeks, movement away from the railway is difficult, and water transport must be almost exclusively employed. The capture of Soochow may also be a matter of some difficulty if the garrison is strengthened by the addition of troops sent from Chinkiang, and a very large force will probably be required.

It is possible that the Chinese may have withdrawn all the engines and rolling stock to the Nanking end of the line, and although the railway is of English standard gauge there must inevitably be great delay before rolling stock can be obtained, for unless the requisite amount can be procured from the railways in North China and Korea it will have to be brought from America;\* neither the Japanese nor Indian railways are of the standard gauge. When hostilities are seen to be imminent, it may be advisable to offer financial inducements to certain natives in order to ensure that on a pre-arranged signal selected bridges shall be demolished, and the removal of rolling stock thereby prevented. Only the Nanking and Hangchow lines should be thus broken; the Wu-sung line should be left intact.

An invader advancing along the railway will be certain to find it greatly damaged, and provision must be made for extensive repairs.

In the event of a decision being made to attack Kiangyin, Wu-hsi Hsien will be found the most convenient point at which the expedition can leave the railway. Thence to Kiangyin there are convenient water communications.

*Distances.*

|                           |     |     |                |
|---------------------------|-----|-----|----------------|
| Shanghai to Wu-hsi Hsien  | ... | 79  | miles by rail. |
| Wu-hsi Hsien to Chinkiang | ... | 71  | " "            |
| Chinkiang to Nanking      | ... | 43  | " "            |
| <br>                      |     |     |                |
| Total                     | ... | 193 |                |
| <br>                      |     |     |                |

Wu-hsi Hsien to Kiangyin ... 23 miles by water.

(iii.) Such information as is available points to the impossibility of landing on the eastern coast of Northern Chiang-su, but a force could land in the extreme north of the province, and by advancing

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\* A certain amount might be obtained from the Canton—Kowloon Railway.

thence to the Yang-tzü would be able to avoid the Kiangyin and Chinkiang defences and to strike the river above them. The difficulties which would be encountered on the march, however, are very great, and the adoption of this course is not recommended unless there are strong reasons against both the others.

The best landing place for the purpose is at Hsin-p'u, which lies on the Hai-chou Ho at a distance from Hai Chou of  $3\frac{1}{2}$  miles by road, or 6 miles by river. Another possible landing place is Hsia-k'ou, which may also be pronounced *Chia-k'ou*, although the former pronunciation is the one locally used. It is about  $3\frac{1}{2}$  miles by road from Ch'ing-k'ou. Of the two places Hsin-p'u is by far the better.\*

After the landing has been effected it will be necessary to capture Ch'ing-chiang-p'u, at which place are stationed 4,500 men of the VII. Division. Thence the Grand Canal can be followed until near the Yang-tzü. An alternate route would be to march overland south-south-west from Ch'ing-chiang-p'u, and passing between the lakes, to move on Pu-k'ou *via* Tien-ch'ang Hsien and Liu-ho Hsien, but no information is available as to this route. It must however be remembered that the Grand Canal may be rendered unnavigable, and the path along its bank destroyed, by letting out the water so as to flood the surrounding country, which normally consists of a flat plain intersected by a network of creeks. Moreover the communications of a force moving south from Ch'ing-chiang-p'u will be exposed to the V. Division at Chi-nan Fu, a division which might take the field 15,000 strong. It can therefore easily be seen that an advance by this route is no light undertaking, and is likely in any case to be a lengthy operation. On arrival at the Yang-tzü the invader will find himself on the opposite bank to Nanking, and will have to cross the river before he can attack, while Kiangyin and Chinkiang will still remain to be captured before communication by steamer can be opened with Shanghai.

A telegraph line follows the Grand Canal, and would facilitate communication, *via* the base and Shanghai, with any naval force operating in the Yang-tzü.

#### *Distances.*

|                                   |     |     |                   |
|-----------------------------------|-----|-----|-------------------|
| Hsin-p'u to Ch'ing-chiang-p'u     | ... | ... | 79 miles by road. |
| Ch'ing-chiang-p'u to the Yang-tzü | ... | 108 | „ „ water.        |
| Total                             | ... | ... | 187 miles.        |

Briefly to recapitulate the advantages and disadvantages of the various lines of advance on Nanking:—

- (i.) To use the Yang-tzü itself, conveying the troops in ships, will be the quickest and simplest plan, but will probably entail landing below each fortified zone in order to capture the works and allow the ships to pass.

\* For details of landing places, *see* Chapter III. For routes *see* Appendix.

- (ii.) To advance from Shanghai along the Nanking Railway will involve the employment of a very large force, and will take longer than to move by water up the Yang-tzü.
- (iii.) To land near Hai Chou and move south will enable Pu-k'ou to be captured without incurring the necessity for first taking the defences of Kiangyin, Chinkiang and Nanking, but the difficulties of the march will be very great, and the time taken must exceed that needed for the carrying out of either of the first two schemes.

At the commencement of hostilities Great Britain will be far superior to China at sea, whereas on land the British forces will certainly be numerically inferior. In order to take advantage of our supremacy afloat, it will be necessary to use the sea and the Yang-tzü as far as possible, while concentrating our land forces so as to be in superior numbers at the decisive points, viz., the various fortified zones. Of these Kiangyin is the strongest, and it should be possible to deliver the attack on that place in superior numbers. If the defensive zones of the Yang-tzü can be reduced, and the river opened as a means of communication, the Chinese army can be dealt with later.

The question of an advance from the vicinity of Cha-p'u and Hangchow towards Wu-hu has not been dealt with here, as the country involved is outside the province of Chiang-su.

*Measures for the defence of the country after the occupation of Nanking.*—Having reduced the defences of the Yang-tzü, occupied Nanking, and obtained control of the Shanghai—Nanking Railway, the invader will have to take steps to prevent himself from being dislodged, because no matter what may be his future intentions it will be necessary to keep open the lines of communication furnished by the river and the railway. Apart from defence against raids by brigands or by scattered parties of Chinese troops, provision must be made to frustrate organized attempts at reconquering the country.

Little is to be feared from the south. The Shanghai—Kashing—Hangchow\* Railway will greatly facilitate the repulse of any advance against Soochow and Shanghai on the part of the Chinese army in the south. Any movement from this direction can only be in small force, since the nearest unit, after the 2,500 men at Hangchow, is the X. Division at Foochow, mustering only between 3,000 and 4,000 men, all of whom will probably be retained for the defence of the Min River.

Danger might be expected from the north were it not for the strong probability that the troops in Chih-li and Shan-tung will be reserved for the defence of the capital. A telegraph line follows the Grand Canal, and it should be possible to get timely warning of any serious advance from this quarter. In case of a threat from the north, the circumstances of the moment must determine whether the invader should merely defend the Yang-tzü or whether he should move out to meet the Chinese advance. In

\* Pekingese pronunciation is: Chia-hsing Fu—Hang-chou Fu.

this connexion it should be noted that although the Grand Canal enters the Yang-tzü from the north at Kua-chou, near Chinkiang, it is not sufficient merely to watch the entrance in order to prevent the exit of boats from the canal. A practicable waterway leaves it 5 miles south of Yang-chou Fu, and runs west to the Yang-tzü at Shih-êrh-yü, 20 miles above Chinkiang. Eight miles north of Yang-chou Fu another waterway, the Li Ho, branches off from the canal and runs east as far as T'ung Chou; it has several connexions with the Yang-tzü. Moreover, it is not essential that a force advancing from Ch'ing-chiang-p'u should use the Grand Canal except for a short distance, since waterways leave it at Huai-an Fu and run eastward to Fu-ning Hsien and Yen-ch'êng Hsien, whence the Yang-tzü can be reached near T'ung Chou or at other points higher up the river. The Yang-tzü must be patrolled by gunboats to prevent any force from crossing.

When the Tientsin—Pu-k'ou Railway is in working order it will doubtless form the main line of advance from the north, and measures will have to be taken accordingly.

It is to the military stations higher up the Yang-tzü that most importance must be attached. How many men they will be able to muster after the capture of Nanking must depend on the losses sustained by the Chinese in its defence, but it may be assumed that of the original numbers some 40,000 will still be available, and this force must be prevented from recapturing Nanking or moving eastwards from An-ch'ing Fu and threatening the lines of communication.\*

With the help of spies there should be no difficulty in ascertaining the whereabouts of any large Chinese force, but the nature of the country, intersected as it is by creeks, will to a large extent prevent rapid action. A small foreign force which has lost its way, and become entangled in the maze of waterways which covers the delta of the Yang-tzü, will be very perilously situated if opposed to an army commanded by an officer of average energy and ability, although wireless telegraphy should render easy the task of maintaining communication with other bodies.

### CASE. 3.—DEFENCE OF THE INTEGRITY OF CHINA.

As previously stated, in the event of Great Britain having to defend the integrity of China the operations are not likely to take place in the Yang-tzü Region, since only one Power can place troops there without a very long march overland, viz., the Power with supremacy at sea. It is in the north that hostilities will probably occur, as there is a possibility that China may be invaded from that direction by land.

The remarks made in Chapter III., however, as to the defence of landing places, would apply equally to their defence by British troops against those of another Power.

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\* See pages 3 and 4.

## CHAPTER II.

## TACTICAL.

*Nature of country.*—A description of the country composing the province of Chiang-su will be found in the “Military Reports” on Northern and Southern Chiang-su. Briefly stated, it is divided into three parts—

- (a.) A flat alluvial plain, which forms the delta of the Yang-tzü and includes most of Southern Chiang-su, while to the north it extends as far as Huai-an Fu.
- (b.) A tract of upland in the neighbourhood of Nanking, extending westwards to the An-hui border and eastwards to a point between Tan-yang and Chang-chou Fu.
- (c.) A sandy plain forming that portion of the province west of Huai-an Fu and the Yen Ho. It resembles in its characteristics the great plain of Chih-li.

The three classes of country will here be considered with regard to their effect upon the action of the various arms.

## THE DELTA.

*Description of country.*—In the Delta the movements of troops are much restricted by the network of waterways which intersect the country and necessitate the almost exclusive use of water transport. The roads are therefore of minor importance ; they are few in number, and consist of narrow tracks either of beaten mud or of rough stone paving. Between the villages there are numerous paths, which are only wide enough to allow of men walking in single file. The plain is perfectly flat, and is covered with villages and farms of which the inhabitants keep the ground in a high state of cultivation, while clumps of trees and groves of bamboo are interspersed with the buildings, and restrict the vision to such an extent that in summer, when the leaves are on the trees, a clear view can rarely be obtained for more than half a mile. The innumerable graves form a characteristic feature of the country, being scattered everywhere in the form of mounds from 3 to 10 feet high ; in fact graves and houses occupy a prominent place in almost every landscape in the Delta.

The waterways, which are usually termed “creeks” by local Europeans, vary in size from navigable channels 100 yards or more in width down to mere ditches. In most cases the level of the water is well below that of the surrounding plain, and it is impossible to see the creek from any distance, or to judge of its

course.\* To such an extent is the country intersected, that although numerous paths follow the boundaries of fields they are compelled to zigzag and to take unexpected turns in order to reach convenient crossing places over the creeks. A man leaving one of the paths and attempting to strike straight across country will almost certainly be brought to a halt within 200 or 300 yards by a more or less impassable channel.

*Artillery.*—In the Delta neither the roads nor the bridges are wide enough to take wheeled artillery, so that except in the immediate neighbourhood of Shanghai, or of the other treaty ports, some other method must be used for transporting guns.

Although all the main roads are passable for horses, and the use of mountain artillery carried on pack mules would not be impossible, the animals would as a rule be unable to move along the small paths which connect villages situated away from the main roads, since many of the bridges would not be strong enough to bear mules. Maxim guns have been carried slung on bamboo poles, and at Shanghai the volunteers have succeeded in mounting these weapons on wheelbarrows in such a manner that they can be fired without removing them from the barrow. It is therefore possible that light artillery might prove of value if carried in either of the above ways.

The most satisfactory method, however, will be to rely almost entirely on water transport for the artillery, since nothing larger than a light mountain gun can be carried in any other manner, and heavy guns will probably be needed to breach the defences of the walled cities.† There will be no difficulty in conveying artillery of all classes along the more important waterways, either in launches or on board the solidly-built cargo boats called *Hsi-tsang*.‡ In the larger channels some form of barge or lighter could be used.

The usefulness of field guns will be much reduced owing to the impossibility of obtaining a clear range in the Delta. Hills, even those of the smallest size, are extremely rare, and the trees and houses restrict the view, so that the tops of city walls, or the highest points of some of the larger bridges, are the only places whence it is possible to see for any distance. An important result of these conditions is that artillery will be very liable to come under infantry fire unless precautions are taken to prevent riflemen from approaching unseen till within range.

*Cavalry.*—The main roads are passable by cavalry in single-file, but the narrow bridges of the smaller paths must check the movement of this arm almost as much as is the case with artillery; in fact mounted troops in the Delta are likely to prove more a hindrance than a help, since the country is most

\* In some parts of the country, especially on the Chê-chiang border, the inhabitants use endless-chain irrigating machines, which are protected from the weather by small sheds. A line of such sheds reveals the presence of a creek, and at the same time indicates its course.

† See page 18.

‡ See "Military Report on the Province of Chiang-su (South of the Yang-tzü)," page 54.

unsuitable for cavalry. A charge is out of the question, while for reconnaissance work and protection duties infantry should be able to move as fast as mounted men, for a man on foot can make his way across an unstable bridge which will bring a mounted soldier to a halt. Moreover there are very few horses in the country, so that forage is hard to procure and grazing ground can rarely be found. In the immediate neighbourhood of Shanghai, however, a mounted detachment could with advantage be employed on patrolling duties.

*Infantry.*—Infantry manœuvring in the Delta will find its freedom of movement much restricted, though in a lesser degree than will artillery and cavalry. The narrowness of the paths must limit the marching formation to single file, and when attempting to attack across country a force is almost certain to find itself confronted with an impassable creek before it has gone half a mile. A clever defender, capable of making a suitable selection from among the many excellent positions which are to be found, could certainly force his adversary to advance over very unfavourable ground, and for the reasons given on page 13 under the head of *Artillery*, there may be difficulty in adequately supporting the attack. Against this must be set the difficulty of making an effective counter-attack; in fact, the defence must be almost purely passive.

In order to deal with the creeks, it would appear advisable that every company, or perhaps every section, should carry a certain number of light bamboo ladders from which to extemporise a means of crossing. As the level of the water is usually well below that of the surrounding country, the actual passage of the obstacle will often be covered from the enemy's fire. The large navigable waterways cannot be crossed except by boat, but are comparatively rare.

An infantry soldier will be able to find plenty of cover. Apart from the trees, graves, and villages with which the Delta is covered, the banks of the creeks are sometimes so high and steep that they can be used as covered approaches to an enemy's position; these obstacles to an advance may therefore at times react to the advantage of the attack.

*Cyclists.*—Cyclists cannot be usefully employed except in the immediate neighbourhood of Shanghai, for in wet weather the paths are impassable for bicycles owing to the mud; but they soon dry, and in fine weather would form good tracks of firm, hard earth. The paved roads are so rough as to be impracticable, and many bridges could only be crossed after dismounting, since steep flights of steps lead up to them on either side.

*Engineers.*—During a campaign in the Delta a great deal of labour must be involved in the removal of natural or artificial obstructions to waterways, and in the repair or construction of bridges. A force operating in this country should contain a large proportion of engineers, who should be well provided with explosives and with bridging materials. The erection and maintenance of telegraph lines are likely to be matters of some difficulty.

*Launch and boat operations.*—The use of water transport, which must be almost exclusively employed in the Delta, would seem to admit of very rapid movement, but under ordinary conditions it will be necessary to ensure the safety of the convoy in the enemy's country, so that it will not be possible to move without advanced and flank guards, and the pace of the column will be thereby reduced to that of infantry moving in single file along winding paths.

In order to take full advantage of the rapidity of movement possible for steam launches, it will be necessary to dispense with the infantry advanced and flank guards. The risks thereby involved must inevitably be great, but in the case of a flying column of which the object is to reach a point at no great distance in the shortest possible time, the reconnaissance and protection duties might be entrusted to armed launches.

It would not be difficult to convert any steam launch into a miniature gunboat by mounting field or machine guns and adding bullet-proof protection, but the shallowness of many of the waterways will prohibit any great increase in the draught of vessels designed for use in the Delta, so that the amount of protection which can be given must of necessity be limited.

The first duty of the launches must be reconnaissance, since it is probable that the waterways may be obstructed by the Chinese at points where the channel grows narrow or shallow, the obstacles taking the form either of temporary barriers such as booms or palisades, or of an obstruction which it may take days to remove, as would be the case if a large bridge were blown up and allowed to fall into the water. The channel may be found filled in by earth thrown from the banks, or junks loaded with stones may be sunk in the fairway. Owing to the fact that the level of the water is often much below that of the surrounding country, an uninterrupted view can rarely be obtained from the deck of any vessel. It is only from the highest points of the bridges over the creeks that any clear outlook can be got, and even then lurking parties of the enemy will be liable to escape detection, so that a launch will always incur the risk of finding her retreat cut off by the blowing up of a bridge behind her.

In addition to the danger of obstructions to the waterways, something is to be feared from the enemy's artillery, although this risk is not so great as would at first sight appear. For the same reasons that make reconnaissance difficult it is almost impossible to find positions from which the enemy can effectively use his guns. Just as is the case with the invader, the defender will be restricted mainly to the water for the transport of artillery; if he should attempt to use his guns from boats he can only meet the invader on level terms, while to employ them effectively from positions on land he will be forced to place them so close to the waterway that they will be liable to suffer from the infantry or machine-gun fire of the launches, of which the hulls will at the same time be protected by the banks of the creek. Indirect fire might possibly be used against vessels in the creeks, but generally speaking the

only points which command the waterways to any extent are the high bridges and the walls of cities. Guns placed on a bridge will form a conspicuous target, but if a waterway runs within range of a city wall a very careful inspection should be made before it is decided to pass the place. At market towns, where for a considerable distance on both banks the houses are often built close down to the water's edge, admirable cover is found whence both artillery and infantry could ambush an advancing launch. The circumstances of the moment must determine the number of craft to be employed as an advanced guard.

The troops will have to be conveyed mainly in boats towed by launches, since it will be impossible to find accommodation on board the steam-vessels for all. A good launch without hindrance may be capable of covering 100 miles in 12 hours, and even with four or five boats in tow might travel 70 miles, so that great rapidity of movement could be obtained by this system of transport. To keep open the communications, however, it will be necessary to garrison certain points along the route, otherwise there will be great risk of the waterways being blocked owing to the demolition of bridges by raiders.

It should be noted that the steam launches navigating the Delta are manned by Chinese, and in case of war against China there may be difficulty in finding locally men who are qualified to take charge; arrangements should therefore be made for the introduction, in case of necessity, of competent engineers from Hong Kong or elsewhere.

#### THE UPLAND COUNTRY.

*Description of country.*—The tactical conditions of the upland country, unlike those of the Delta, do not differ to any great extent from those prevailing in many parts of Europe, except in the matter of roads, of which the place is taken by narrow tracks composed either of beaten mud or rough stone paving.

The stone-paved roads were first constructed many hundreds of years ago, and have received but little attention since, with the result that the great blocks forming the pavement have become worn and displaced, until in many places it is impossible for any vehicle, even a Chinese cart, to move along the road, and fresh tracks have therefore been formed alongside the paving. A notable example is the *Ching-lu*, laid down in the 14th century between Tan-yang and Nanking, when the latter was the capital of the empire. At the present day this road is impassable for wheeled traffic except for short distances. During heavy rain, and for 48 hours afterwards, the mud tracks are extremely heavy, but at other times the beaten mud is always to be preferred to the pavement, although neither forms a good surface for transport of any kind.

Much of the country, especially within the triangle formed by Chinkiang, Tan-yang and Nanking, is rolling or undulating and offers numerous good positions for defence against an invader

moving westwards, while there are many small valleys where large bodies of troops could be effectually concealed. Indentations of the ground, together with grave mounds, trees, and hamlets, provide a fair amount of cover for infantry. It would be possible from many of the hills and ridges to signal for a considerable distance in almost all directions, allowing of communication, both laterally and from front to rear, between different columns marching across the country.

Freedom of movement is restricted only by certain hills and by the waterways, which here are but few in number. Except in the narrow belt of swampy ground lying along the south bank of the Yang-tzü between the river and the hills, they are usually narrow channels sunk some distance below the level of the surrounding country. All main roads cross them by substantial bridges of trestles and stone slabs.\* These bridges are generally passable for all arms, but the waterways, although in most places they can be forded by infantry, are as a rule impassable for the other arms owing to the height and steepness of their banks.

*Artillery.*—The number of guns at the disposal of the Chinese is considerable, and it is essential that any force operating against Nanking shall be well provided with mobile artillery. The absence of good roads limits to a great extent the usefulness of field artillery, but its employment is practicable along the roads from Chinkiang to Nanking, *via* either Tan-yang or Kao-tzü.† It will, however, frequently be necessary to make deviations from the actual track, and parties of engineers should be sent in advance to strengthen unstable bridges, to clear away obstructions, and to improve or widen the track as required. Wheeled guns will be able to move with a fair amount of freedom away from the roads. Mountain guns will have a wide range of movement, and should prove of the greatest value.

*Cavalry.*—The country admits of extensive reconnaissance by mounted men, the only restrictions to their movement being the waterways. These, however, are not so numerous as to detract materially from the value of mounted troops. Ample forage can be obtained, and there is plenty of grazing land.

*Infantry.*—In the Upland Country there are no special features affecting the employment of infantry.

*Cyclist.*—The roads are not suitable for bicycles, but in the event of its being found impossible to provide mounted troops, a few cyclists might prove of value.

*Engineers.*—The engineers accompanying the force will find ample employment in building or strengthening bridges, and improving the roads. A permanent telegraph line runs from Tan-yang to Ku-yung and Nanking, while the country as a whole offers no obstacle to the erection of air-line or to the use of cable, except as regards the difficulty of transport.

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\* See "Military Report on the Province of Chiang-su (South of the Yang-tzü)," p. 32.

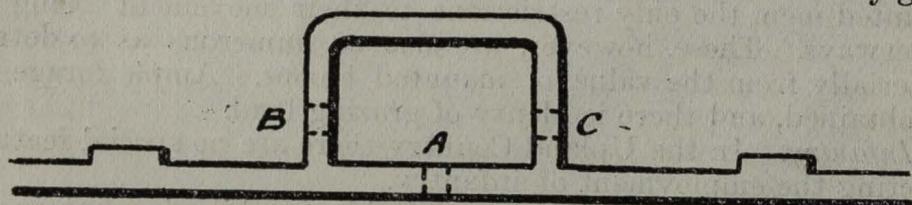
† A station on the Chinkiang—Nanking line, 8 miles west of Chinkiang.

## THE SANDY PLAIN IN THE NORTH-WEST.

The tactical conditions in the sandy plain lying to the west of Huai-an Fu do not materially differ from those of the upland country in the south. Waterways are not numerous, the most important being the Grand Canal and the Yen Ho.\* The country on the whole is open ; mounted troops can manoeuvre with freedom ; owing to the rough roads mountain artillery will have an advantage over field artillery as regards ease of movement ; infantry will find some of the hills both steep and rocky, but the only serious obstacle which they are likely to encounter will be the floods to which certain parts of the country are liable during July, August and September.

## OPERATIONS AGAINST WALLED CITIES.

The defences of the walled cities of China, though in many cases they are of immense antiquity, are often of such strength that they may prove extremely difficult to take if well defended. The main defence is a wall consisting of an earth or rubble bank faced with brick, which may be over 30 feet high and 20 feet thick, and has at intervals small bastions or towers for flank defence. A brick parapet along the top is loopholed for musketry and pierced with embrasures for artillery. In the Delta the wall is supplemented by a moat which is usually unfordable. The only entrances are the gates, which are tunnelled passages through the wall, and are protected on the outside by a semicircular or rectangular screen of a construction similar to that of the city wall, enclosing an area of several hundred square yards. This enclosure is usually entered at the side, but there may be more than one opening, although the governing idea is always the same, viz., to prevent an enemy from directly bombarding the gate in the main wall. The accompanying plan explains the common construction of a city gate.



INTERIOR OF CITY.

A.—Entrance, main wall.  
 B, C , , outer screen.

During the operations against the Tai-p'ing rebels in 1863-64, it frequently became necessary that a walled city should be taken. Unfortunately no very detailed account has been published of the tactics adopted by General Gordon when assaulting a town, but he appears usually to have pushed heavy guns as close as possible to the walls in order to form a breach, and afterwards to have sent a storming column across the moat in boats. Even with the smooth-

\* See Map No. 1.

bore muzzle-loaders at that time in general use, the defenders were on more than one occasion able to repulse the attack with loss, and against the modern magazine rifles with which the Chinese are now being armed, an assault upon a well-garrisoned city should not be undertaken without careful preparation. There are, however, in connexion with most Chinese cities, several points which favour the attack—

- (a.) In the past the higher leaders of the defence have not as a rule shown great determination, although instances have occurred where a few men under a resolute leader have accepted death in preference to surrender.
- (b.) The great extent of the walls of many cities precludes their being effectively held at all points, with the result that feints can be employed with great advantage. Against this, however, must be set the fact that the top of the wall usually forms a good road, along which infantry, and sometimes artillery, can be rapidly moved under cover of the parapet.
- (c.) Suburbs are in places built right up to the wall, or up to the outer edge of the moat when one exists. Under cover of the houses guns could be pushed in to very short range, and the assault could be launched from a point close to the walls, while supports kept up a fire from the buildings of the suburb.
- (d.) The moat, as a rule, has several connexions with the waterways of the surrounding country, so that it may be possible to collect boats on one side of the city, thereby attracting the attention of the defenders, and then, by making a detour, suddenly to throw a column against some other portion of the walls.

An attempt to pass men across a moat when helplessly crowded together in boats must under any circumstances be a dangerous operation, even at night. There is generally a bridge across the moat at each of the principal gates, and although these will undoubtedly be more strongly held than any other part of the defences, it may be better to attack a gate than to incur the risks involved by the passage of the moat in boats.

Even after the defences are taken a determined enemy can continue the fight for some time, since the intricacies of a Chinese city give great opportunities for street fighting. The walls rarely have any parapet on the inside, and men on the top will be exposed to riflemen in the town ; it will therefore be best to hold at first only the gates or other commanding points, protection being devised against fire from the interior of the city. The bricks of which the walls are almost invariably built can be used to form breastworks. There should be no difficulty in bringing guns into the city, and the principal streets are always wide enough to admit of their passage, but their usefulness may be limited by the difficulty of finding suitable positions for them, since even on the top of the walls they will often find their view blocked by

the adjoining houses, while they will be liable to come under infantry fire from the town.

Perhaps the best modern instance of the assault of a Chinese walled city is that of the attack on Tientsin by the Allies on the 13th and 14th July, 1900.\* The artillery used comprised—

- One 4-inch gun.
- Three 12-pr. guns.
- Three 3·2-inch guns.
- Twenty-two mountain guns.
- Several field and boat guns.

These pieces were to some extent able to keep down the enemy's rifle fire from the walls, but they failed to make a breach. On the 13th the attack came to a standstill, and the capture of the city on the 14th was due to the action of the Japanese, who during the night had bridged the moat and blown in a gate. It has been stated that this gate was very weakly held, a fact which may account for the Japanese success.

#### NOTES ON THE ATTACK OF CERTAIN CITIES.

*Chü-jung Hsien*.—Assault at any point would present little difficulty, but would be easiest on the north-east and north-west.

*Feng-hsien Hsien*.—The most favourable quarter from which to attack would be the south, where the sea-wall, a bank 20 feet high and 12 feet thick at the top, runs parallel to the southern face of the city wall at a distance of 150 yards.

*Kashing* (Pekingese pronunciation : *Chia-hsing Fu*).—The city could best be attacked through the northern suburb, where houses give cover right up to the wall.

*Quinsan* (Pekingese pronunciation : *K'un-shan Hsien*).—Inside the city, near the north-west corner, a steep hill rises to a height of 270 feet. It is surmounted by a pagoda, and as it is the only eminence for miles around it commands the interior of the city and the country in all directions. Wheeled artillery could best be placed on the summit by bringing the guns in boats through the water-gate close to the North Gate, and man-handling them up the northern slope of the hill. At the water-gate the channel is 12 feet wide, and there is 6 feet of headroom.

#### OCCUPATION AND DEFENCE OF SHANGHAI.

*General observations*.—Shanghai occupies a very large area, and the land front which may need defence extends for about 12 miles. To protect the city and settlements against an attack by a numerous enemy would require a very large force, but it is not likely that the Chinese will advance from Nanking, Chinkiang and Soochow—the nearest points at which strong bodies of troops are quartered—and seriously threaten Shanghai, although if the garrisons of Soochow and Hangchow were collected their

\* The attack on Peking in August, 1900, furnishes another example. See "Official Account of the Military Operations in China, 1900-1901."

numbers might amount to over 15,000 without calling out the reserves. As a protection against an anti-foreign outbreak, or as the garrison of the base while operations are proceeding inland, one brigade of infantry, with a squadron of cavalry and some guns, should form an ample garrison.

The presence of troops in Shanghai should itself have sufficient moral effect to prevent an anti-foreign outbreak, but should an organized attack be expected the place will be best defended by a chain of fortified posts guarding the lines of approach, while the main body of the troops is held in reserve in some central position. Apart from the Huang-p'u River, the patrolling of which would probably be undertaken by the navy, the main lines of approach are—

- (1.) The Siccawei Creek and the road which runs near it.
- (2.) The Soochow Creek.
- (3.) The railway to Soochow and Nanking.
- (4.) The railway and road to Wu-sung.
- (5.) The Kashing—Hangchow Railway.

Suitable places for posts watching these lines will be found as follows :—

- (1.) For the Siccawei Creek, &c.: either the Nanyang College or the Siccawei Mission.
- (2.) For the Soochow Creek : the Jessfield Cotton Mills.
- (3.) (4.) (5.) For the railways : the railway stations, with perhaps another post at the Municipal Gaol.

If launches and cavalry patrols are sent out daily, they ought to give timely warning of the approach of an enemy, and if necessary the railways, creeks and roads can be obstructed in order to prevent a rapid advance of the Chinese under cover of darkness. Communication should be established with the posts either by telegraph, telephone, or signal. Motor cars may prove of use, as may also the electric tramways with which Shanghai is provided.

The main body or reserve can be quartered in any central situation, such as the racecourse, but in this connexion it must be noted that if the troops are sent solely for the protection of British subjects it may not always be possible to occupy those buildings which appear most suitable from a military point of view, either as quarters or as fortified posts. For instance the Nanyang College is occupied by Americans and the Siccawei Mission by Frenchmen. Even in war it may not be advisable to take possession of places belonging to the subjects of foreign nations, and in such a case special fortified posts will have to be constructed.

Guards may have to be placed on such important points as—

- (a.) The waterworks, situated on the left bank of the Huang-p'u River, 2 miles below the junction of the Soochow Creek.
- (b.) The gasworks, at the junction of Tibet Road with the Soochow Creek.

(c.) The two electric power stations, of which one is in Hongkew at the junction of Yuhang and Fearon Roads, and the other at the junction of Hart and Great Western Roads, near the Bubbling Well.

*Kiangnan Arsenal.*—On the river front the arsenal is without defence, being unprovided even with a wall. Five hundred yards to the north-east lies the Kao-ch'ang-miao Fort, but its armament is in bad condition, and the garrison consists of soldiers of the old style, who are never practised in the use of the guns. Unless time for preparation were given to the Chinese the reduction of the arsenal and fort by one or two warships in the Huang-p'u should present little difficulty. There is, however, a considerable stock of modern heavy guns in the arsenal, and an energetic commander, given a few days in which to prepare his defence, could make it a very hazardous operation for ships to approach, while trained troops could be brought in by rail to supplement the usual garrison in case of an attack by land. It is therefore of the utmost importance that the arsenal should be seized at the earliest possible moment.

Should it be decided to attack from the land side, there are two lines of approach—

- (a.) Along the *bund* or river embankment.
- (b.) By a road branching off from the French Siccawei Road, and leading to the arsenal.

Of these, the first passes a Chinese *camp* and also the Kao-ch'ang-miao Fort; the second passes one Chinese camp only. Along both routes wheeled artillery can be moved, and much cover can be found among houses and graves.

On the land side the arsenal is surrounded by a brick wall, 12 feet high, which should easily be breached by field artillery.

*Chinese City.*—Circumstances must determine the action to be taken with regard to the Chinese City, but in case of war or of anti-foreign disturbance its occupation will become essential; the simplest method of holding it will probably be to establish a fortified post on the wall at each gate. Should an attack on the city be necessary, ships in the Huang-p'u River could bring fire to bear on the walls at a short distance, while on the north side the houses of the French Settlement give good cover right up to the walls, allowing wheeled artillery to be pushed in to close range. On the north side, moreover, the moat is in places not more than 1 or 2 feet in depth. If for diplomatic reasons it were not possible to use the French Settlement as cover, an advance might be made through the suburbs on the east and west sides of the Chinese City, as there are good roads for the movement of artillery.

## CHAPTER III.

## LANDING PLACES.\*

*Alternatives.*—In the event of military operations becoming necessary in the Yang-tzü Region, troops might be landed in one or both of the following localities:—

1. Shanghai and its vicinity.
2. The coast of Northern Chiang-su.

The landing places of Class 1 are suitable for a force of which Shanghai is the first objective. Class 2 would be used only by an expedition intended either to strike the Yang-tzü at some point far above Wu-sung, such as Kiangyin or Chinkiang, thereby avoiding or turning the fortifications barring the river, or for some expedition with an objective close to the landing place. The difficulties to be encountered are so great that a landing on the coast of Northern Chiang-su should only be attempted as a last resort.

It can only be with the concurrence of the Chinese Government that Shanghai can be used for the disembarkation of troops, unless the defences at the entrance to the Huang-p'u River have been first rendered harmless. In the event of an anti-foreign disturbance the Government might be ostensibly friendly, in which case troops brought by sea could be landed directly at Shanghai, a port where every convenience will be found. If, however, the Government were hostile, the alternative courses would be either for a naval squadron to silence the Wu-sung Forts and clear the channel of mines, a very risky undertaking, or for troops to be landed elsewhere, advancing across country to occupy Shanghai and reduce the forts.

## 1.—LANDING PLACES IN THE VICINITY OF SHANGHAI.†

The landing places in the vicinity of Shanghai can be divided into—

- (a.) The coast to the eastward of Shanghai.
- (b.) The right bank of the Yang-tzü, above Wu-sung.
- (c.) Cha-p'u.

\* In Chapter I. this subject has already been dealt with in outline.

† See Map No. 2.

(a.) *The Coast to the Eastward.*

*General observations.*—The coast due east of Shanghai consists of mudbanks, and the shallowness of the water makes it impossible for ships to approach close inshore, so that although a disembarkation would be possible in fine weather at almost any point, convenient landing places are few in number. A gale from any direction would render the disembarkation difficult, while if the wind came from any point of the compass from north-west by north, round by north, to south-south-east, a landing would be impossible anywhere.

*Opposition to be expected.*—Even supposing that the Government had ample warning of the approach of an invading expedition, it is unlikely that a landing would be seriously opposed. Apart from the notorious slowness in acting of the Chinese, there must be great uncertainty as to the point where the disembarkation is to be expected. Shanghai and Hangchow will be the nearest places at which any organized bodies are likely to be found.

The whole line of coast, however, is protected by two, three, or even four sea-walls, varying in size from mud embankments 20 feet high and 25 feet thick down to insignificant mounds, and a force opposing a landing will find in them a series of excellent positions for defence. The shallowness of the water will prevent warships from coming close enough inshore to enfilade the sea-walls, and the coast is so low that it would be dangerous to support the landing parties too long by fire from the ships.

*Preliminary measures.*—Once the disembarkation has been effected and the advance on Shanghai begun, the remarks made in Chapter II. under the heading “Delta” will apply, and water transport will be the most convenient to use, but boats suitable for inland creeks are not to be found in large numbers on the coast, where the vessels are mostly large junks intended for the navigation of the Yang-tzü, and it will therefore be advisable to bring suitable boats with the expedition.

The ordinary boats carried by European ships, if drawing not more than three feet when loaded, could be used without difficulty in the creeks, but the number of these craft usually procurable is limited, and their weight would make them inconvenient to handle at the *portages* over the sea-walls. Any British expedition must either start from Hong Kong or pass through that port, and the cheapest and simplest plan will therefore be to collect Chinese *sampans* in Hong Kong, and carry them to the landing place on board the transports. The boats must be strong enough for use during the disembarkation, and at the same time be light enough to admit of their being hauled over the sea-walls, while their draught loaded must not exceed three feet, nor their beam nine feet.

The usual method of propelling a Chinese boat is by using a *yulo*, which is a single oar projecting from the stern, and is worked with a to and-fro motion in a way similar to that known by British boatmen as “single sculling.” A *yulo*, however, requires much

practice before a mastery over it can be obtained, and with inexperienced men the boats will make but little progress ; Chinese boatmen must therefore be brought from Hong Kong, or paddles must be specially provided to replace the *yulo*, the creeks being in many cases too narrow to admit of the use of oars.

Most Chinese boats are furnished with masts and sails, which may prove of use in the disembarkation, but the best plan will be to carry steam launches and tow the boats ashore.

In traversing the waterways between the coast and Shanghai the sails will also prove of service, but in case of a contrary wind it will be necessary to rely either on paddling, on punting with poles, or on towing from the bank. Boats without sails should be provided with a mast for towing purposes ; all masts must be removable at will, to allow of passing under bridges. Each boat should have a tow-rope fitted with loops for the men towing. It should be noted that in the Huang-p'u river the average speed of the tide is about  $2\frac{1}{2}$  knots, and that it is therefore frequently impossible to make headway against the current when rowing or sailing ; with a fair tide, on the other hand, good progress can be made by drifting.

Rollers and tackle will probably be found of service when moving the boats over the sea-walls.

*Position of landing places.*—There are two places which appear suitable for landing—

- (i.) The mouth of the Pai-lung-chiang Creek, about 2 miles south-east of the Kiu-toan Beacon\*, and almost due west of the Kiu-toan Light, approximate latitude and longitude  $31^{\circ} 14' N.$ , and  $121^{\circ} 44' E.$
- (ii.) The point of land jutting out about one mile north of the Kiu-toan Beacon, approximate latitude and longitude  $31^{\circ} 16' 35'' N.$ , and  $121^{\circ} 43' 50'' E.$

(i.) *The Pai-lung-chiang Creek.*—Ships approaching the mouth of the creek can anchor in four fathoms at a distance of a mile and a-half from the shore, and at half tide boats drawing three feet can enter the creek, while at high water with ordinary tides, the least depth at the mouth is nine feet.

Should the landing be unopposed, it will not be necessary to disembark on the beach, since the boats can navigate the creek as far as a flood-gate in the second sea-wall, half a mile inland. In such a case, however, it will be advisable to send in a small boat at low water, in order that as the tide rises the tortuous channel may be marked with bamboo stakes, otherwise the navigation may present some difficulty.

In the event of opposition being encountered, the boats will probably find it necessary to spread out and disembark the troops along the beach, an operation which may entail wading for some

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\* Not to be confused with the Kiu-toan Small Beacon, which lies some miles to the north-west.

distance. The shore, however, is of firm mud, and the men should reach dry land without much effort. Even should opposition not be probable a covering party should at once be sent to occupy the first two sea-walls, wading ashore if the expedition arrives off the landing place when the tide is too low to admit of boats entering the creek. If the Chinese are found in great force, it will probably be too hazardous to attempt landing a party until the tide is high enough to allow of the boats approaching close inshore before taking the ground, and in this case the time of waiting can profitably be employed in making a feint at some other point.

An outer embankment here closely follows the high water mark. It is four or five feet high, and is intended to protect some cultivation which is carried on outside the first sea-wall, which averages 20 feet in height and 25 feet in width across the top, and lies at a distance varying between 300 and 500 yards from the beach. Landing would be a dangerous operation if this wall were held by the enemy, but fire from ships could be brought to bear at a range of 3,000 yards, whereas difficulties of transport would probably prevent the defence from having any artillery in position there, unless long notice had been received of the intended landing.

A second sea-wall of approximately the same size as the first, and 400 to 800 yards further inland, contains at the village of Pai-lung-chiang a flood-gate which cuts off the outer creek from the inland waterways, and a *portage* will be necessary in order to get the boats over the wall and into the inner creek. Small craft can be hauled out on either bank, so that the *portage* can proceed on both sides of the creek at once. The distance for which the boats must be carried is about 30 yards. Between this wall and the sea, the creek forms the only obstacle to the free movement of infantry in any direction, and a landing party must in the quickest possible time obtain possession of the first and second sea-walls, no matter whether the disembarkation is opposed or not.

At an average distance of rather over a mile and a quarter inland from the second sea-wall, is found a third, which is of about the same size as the first and second, but for preventing a landing is of little use, as it does not command a view of the sea. It would, however, form a strong position from which to oppose the advance of an invader, since it offers little target to the fire of the ships, while between it and the second sea-wall the ground is much cut up by creeks, which must greatly hamper the movement of troops. At the village of Lin-chia-ma-tou a *portage* across the third sea-wall is necessary ; the sides of the embankment are steep, and the distance for which the boats will have to be carried is 70 yards.

The remains of a fourth sea wall, now disused, are found about a mile and a half inland from the third. In many places it has almost disappeared, but in others it is four or five feet high and 30 feet thick. A main road from Ch'uan-sha T'ing runs along the top of the bank, and on either hand are found navigable waterways,

while numerous openings allow of the passage of boats from one side to the other, and render a *portage* unnecessary. After passing this sea-wall boats will find themselves in the network of creeks which covers the whole of the Delta, and there is more than one route by which Shanghai can be reached. Before going further, however, it will be well, for purposes of comparison, to describe the second landing place.

(ii.) *The point north of the Kiu-toan Beacon.*—Vessels can here anchor in six fathoms of water within half a mile of the beach, and although for a few hundred yards south of the point the slope of the shore is steeper than elsewhere and therefore admits of boats approaching to within a short distance before grounding, a landing can be effected without difficulty anywhere. At high spring tides it may be possible to land near the point without wading, but the foreshore is of firm mud presenting no difficulty at any state of the tide.

The first sea-wall, which is about 20 feet high and 20 feet thick, will be found running parallel to the shore and about 300 yards inland. Between the wall and the sea the ground in winter is open, but in summer is partly covered with rushes four feet high. The seizure of the wall should be the first act of the landing party, as it forms an admirable position from which to cover a disembarkation. As in the case of the Pai-lung-chiang Creek, the Chinese could make landing a dangerous operation by holding the first sea-wall.

The second sea-wall of the Pai-lung-chiang Creek is not encountered opposite the point. The third is of about the same size as the first, and is well adapted for defence. Between the first and third walls stretch two miles of open, cultivated country, intersected by small creeks and ditches. The fourth sea-wall is  $3\frac{1}{2}$  miles from the shore, and is here no more than a low embankment, along the top of which several villages have been built. Beyond the fourth wall is found the Delta system of waterways.

*Comparison of the two landing places.*—The Pai-lung-chiang Creek is the better place for the actual landing, since by moving up the creek in boats the necessity for wading ashore is avoided. Moreover, the boats which are used for the disembarkation can be taken right through to Shanghai, although they will have to be carried over two of the sea-walls, whereas there may be great delay if it is necessary to collect transport locally, as would be the case if the landing were made at the point. Here there is no water communication with Shanghai from any place nearer than Kung-chia-lu, which is  $3\frac{1}{2}$  miles inland, and it would be almost impossible to carry sufficient boats over the intervening country. If, however, there is urgent necessity for the immediate arrival of troops at Shanghai, the point will have the advantage that ships can approach closer to the shore, and if the troops march overland, taking with them only what they can carry, they will find that the distance to Shanghai is 3 miles less than in the case of the Pai-lung-chiang.

The distances overland are :—

|   |   |                                    |
|---|---|------------------------------------|
| To the Shanghai Custom House.                                 | { | From the Pai-lung-chiang 20 miles. |
|   |   | , Point ... ... 17 "               |
| To the Huang-p'u River, opposite the eastern end of Shanghai. | { | From the Pai-lung-chiang 17 miles. |
|   |   | , Point ... ... 14 "               |

*Lines of advance to Shanghai.*—There are several routes by which Shanghai can be reached after passing the sea-walls. It will be seen that the choice of routes is governed in no small degree by the state of affairs in Shanghai and its vicinity, and it will be of the very greatest advantage if communication by wireless telegraphy can be effected between Shanghai and the ships bringing the expedition.

From a point just north of the village of Hsiao-wan a creek leads off in a westerly direction, forking at Lu-chia-chai into two branches, one of which, called the Li-chia-pêng Creek, runs S.S.W. until it joins the Pai-lien Ching, a creek flowing into the Huang-p'u 3 miles above Shanghai.\* The other branch, called the Chao-chia-kou Creek, runs north-west and meets the Wang-p'u 6 miles below Shanghai, at Tung-kou on the Battery Creek.† As regards distance there is little to choose between the two routes, but if launches are sent from Shanghai to meet the expedition, the northern one has the advantage that even at low tide and with the water at winter level they can navigate the Chao-chia-kou Creek as far as Nan-chang-chia-ch'iao, a village 10 miles from Shanghai. By the southern route launches cannot be certain, at low water, of reaching a point more than half a mile up the Pai-lien Ching, or about  $3\frac{1}{2}$  miles from Shanghai. Another point in favour of the northern route is that the Battery Creek, although within 9 miles of the Wu-sung Forts, is not visible from them, and since the garrisons must be kept in the works in time of danger, little is to be feared from that quarter. On the other hand the Pai-lien Ching enters the Huang-p'u at a point nearly opposite to the arsenal and the Kao-ch'ang-miao Fort, and as long as these are in Chinese possession it will be impossible to use the southern route.

Water routes between Kung-chia-lu and Shanghai are described in Routes A, B and G. Fifty or sixty small boats, averaging 15 feet in length and 3 or 4 feet in beam, can usually be found in Kung-chia-lu.

In the event of its being decided to march overland, Route C describes the shortest road from the Pai-lung-chiang to Shanghai, and Route D that from Kung-chia-lu. At this village it may be possible to obtain 10 or even 20 wheelbarrows, which will be found of great assistance, as a lightly loaded wheelbarrow can keep up with infantry on the march. Some means of crossing the Huang-p'u on arrival opposite Shanghai will be required by a column marching overland. If wireless communica-

\* Route A.

† Route B.

tion has been established, lighters and launches can perhaps meet the force on its arrival at the river, but in any case sufficient sampans and craft of every class should be found available along the bank.

*Water and supplies.*—The water of the creeks is everywhere drunk by the inhabitants, who seem to experience no evil effects, but it should be boiled before drinking by Europeans. Two or three days' rations should if possible be carried with the troops, but if it becomes necessary to purchase supplies, the column will find that rice, flour, vegetables, pork, fish, ducks, chickens and eggs can be obtained at Hsiao-wan, Wang-chia-chiang, Liu-chia-hang, Tung-kou, Chang-chiang-cha, Pei-ts'ai, and many other villages and towns.

(b.) *The right bank of the Yang-tzü above Wu-sung.*

*General observations.*—There are three entrance channels to the Yang-tzü—

- (i.) The southern, which is the one in general use, lying between the mainland on the south and Chung-pao-sha Island.
- (ii.) The centre channel, between Chung-pao-sha and Ts'ung-ming Island.
- (iii.) The northern, between Ts'ung-ming Island and the mainland to the north.

The southern channel is commanded by the guns of Nan-ssü-t'ang Battery. The centre channel joins the southern above Chung-pao-sha Island, and comes under the fire of Shih-tzü-lin Battery. A submarine mining establishment exists at Nan-ssü-t'ang, and although the mines are few in number, and their gear of inferior quality, they may add considerably to the danger of an attempt to force a passage if the Chinese are given a few days in which to lay them out. The northern channel is never used by steamers and is unsurveyed, so that there is no information available as to the possibility of navigating it with ships of 12 to 15 feet draught. Moreover, owing to the strong tides and constantly shifting sandbanks, it is essential to use an expert pilot having local knowledge of this portion of the river. It can therefore be seen that an entry to the Yang-tzü in the face of opposition is likely to prove a very dangerous undertaking, even at night.

Circumstances may, however, render it imperative that a landing shall be effected above Wu-sung, in order that the defences may be attacked from the land side. The disembarkation should take place as near Wu-sung as possible, but must be out of range of the guns of Shih-tzü-lin Battery. For this purpose there appear to be several suitable places on the river bank between Liu-ho-k'ou and Tien-êrh-chai.\*

Although a gale from any direction will raise a rough, choppy sea, making boatwork difficult, a landing should be possible in

\* See Map No. 2.

all weathers, and ships lying at anchor will not be in any danger.

At low spring tides the mud of the river bed is visible to a distance of over three quarters of a mile from the shore, and even at high tide is covered by only about six feet of water, but where creeks join the river, shallow channels have been worn in the mud. Vessels drawing 12 to 15 feet of water could not approach within  $1\frac{1}{4}$  miles of the shore, but there are no rocks, and the bottom and banks are of firm alluvial mud forming good holding ground, and not difficult to walk over when exposed by the tide.

The sea-wall which keeps the river within bounds is a bank of earth with a stone hearting; it varies considerably in size, especially as regards its width across the top, but the section on the opposite page shows the average dimensions. The outer face of the wall is protected in places by two, three or even four rows of wooden piles, the rows being spaced three or four feet apart, and the intervals between them filled in with large stones. The section shows only two rows of piles. They are of a considerable height, and it would be almost impossible to land where they are found.

As in the case of a landing on the coast east of Shanghai, it is unlikely that serious opposition will be encountered. The country inland from the sea-wall low-lying and wet, much intersected by creeks, and studded with clumps of trees. There is only one sea-wall, but much trouble could be given by defenders concealed in villages and amongst the trees, and the difficulty of obtaining a clear view for any distance would to a large extent discount the value of covering fire from ships' guns. In any case parties should be pushed some little distance inland in order to cover the landing against molestation.

*Position of landing places.*—The places which appear most suitable are four in number—

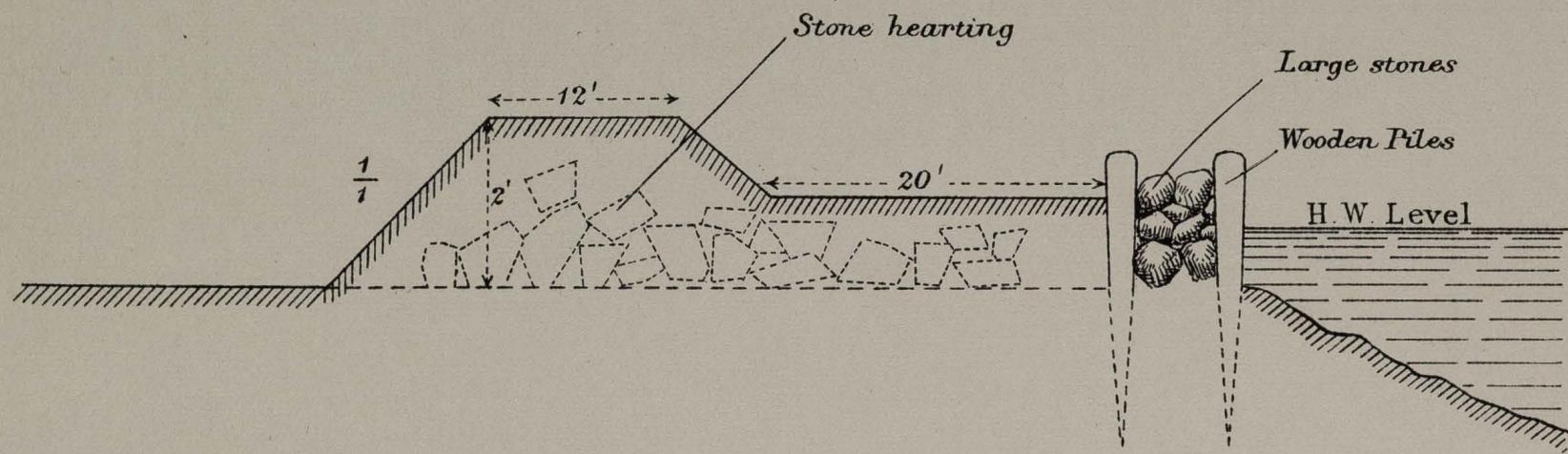
- (1.) Inside the mouth of the Liu-ho Creek, near the village of Liu-ho-k'ou.
- (2.) A stretch of the river bank, about 500 yards long, immediately south-east of the mouth of the Liu-ho Creek.
- (3.) A stretch of the river bank, about 4 miles long, of which the north-western end is a mile and a half south-east of the Liu-ho Creek.
- (4.) Inside the mouth of the creek at Tien-êrh-chai.

At all other points the sea-wall is faced with the piles described above, and a landing would not be easy.\*

(1.) *The mouth of the Liu-ho Creek.*†—The position of the creek is defined by a beacon and a wooden watch-tower on the north side, and by a beacon and the Lung-wang-miao Temple on the sea-wall about three-quarters of a mile to the south. The watch-tower is partly hidden by trees.

\* A landing could be effected just north of the Liu-ho Creek, but the force would find itself cut off from its objective by the creek.

† See Map No. 4.



Section through Sea-wall near Liu-ho-kou.

Good landing places can be found along the south bank of the creek after passing the sea-wall. At high tide there should be no difficulty of any kind, but at low water only boats of the lightest draught can approach, and they are then compelled to use the channel worn by the water of the creek through the mud of the river bed. At low tide, moreover, the soft mud of the creek is exposed, and planks must be carried on which the men can walk when going ashore.

(2.) *The river bank south-east of the Liu-ho Creek.*—Between the sea-wall and the river the foreshore consists of a stretch of firm mud covered with grass, and is about 2 feet above the level of ordinary high water, but even should it be submerged by an exceptional tide a landing could still be effected. The river bed slopes so gently that boats will take the ground before they reach the shore, and it must always be necessary to wade some distance. At low water a mile of mud is exposed, so that it will be better to make the landing at high tide, thereby saving the troops the trying walk over the wet mud. The use of light flat-bottomed boats would reduce the wading to a minimum. The sea-wall is the nearest point which is always high and dry; between the wall and the river the country is liable to be flooded, although it is always passable.

(3.) *The river bank further to the south-east.*—The position of this landing place is not defined by any conspicuous objects. It lies between two points at which the sea-wall bends inland, and is, in fact, reclaimed land once forming part of the river bed. On Map No. 2 its position is roughly that occupied by the word SEA, south-east of Liu-ho-k'ou. The conditions are the same as those of the landing place just described, the sea-wall lying about half-a-mile inland from the normal high-water mark. The telegraph line from Shanghai to Liu-ho-lao-chêng passes at a distance of about half to three-quarters of a mile from the sea-wall.

(4.) *At Tien-êrh-chai.*—A waterway called the Sa-tung Creek here joins the Yang-tzü, the mouth of the creek being defined by a bridge which spans it, and by a sharp indentation in the river bank. The high, perpendicular masonry abutments of the bridge are about 20 feet apart, and 30 feet outside is found an irregular breakwater of piles and stones, just submerged at high tide, and blocking the entrance except for a narrow passage at each end, between the breakwater and the sea-wall. For a mile on either side of the creek no landing is possible on the river bank, owing to the piles facing the sea-wall. Once inside the bridge, a landing can be effected with ease, but the channel is smaller and shallower than that of the Liu-ho Creek.

*Comparison of the landing places.*—There is very little to choose between the landing places, as none of them present either great difficulties or great facilities. If the Wu-sung defences form the first objective of the expedition, Tien-êrh-chai is by far the nearest point, in fact it is almost dangerously close to Shih-tzü-lin Battery, but for convenience in landing the Liu-ho Creek will probably be found the best, and from it communication by water can be estab-

lished with Shanghai *via* Tai-ts'ang Chou, this route being passable at all times of the year by steam launches drawing as much as 5 feet. The whole locality is unsuitable for the formation of a base, but the market town of Liu-ho-hsin-chêng could, if necessary, be used for a time. In its normal state the town offers but indifferent accommodation for European troops, but is capable of improvement, as the houses, about 250 in number, are of brick with tiled roofs, are not too close together, and stand on dry ground near which is an ample supply of running water. There are no buildings specially suitable for hospitals, stores, &c. About 20 useful native craft of various sizes will generally be found in the mouth of the Liu-ho Creek, and another 100 could probably be obtained at Liu-ho-lao-chêng, a town of about 1,500 houses lying 3 miles inland. No steam launches can be counted on nearer than Shanghai, although it is possible to that one or two might be found at the north gate of Tai-ts'ang Chou.

From the Sa-tung Creek at Tien-êrh-chai there is water communication with Shanghai, but the draught of the boats used must not exceed 3 feet, even in summer, and the number of native craft which can be obtained is very limited. About 10 small fishing vessels usually lie inside the mouth of the creek. It is only in the Liu-ho and Sa-tung Creeks that any boats are likely to be found.

The road along the top of the sea-wall is a most important means of communication. From Liu-ho-k'ou to Tien-êrh-chai the distance is about 8 miles, over the whole of which the sea-wall forms a good road, which, with a little improvement, would be practicable for field artillery, in fact it extends unbroken as far as Wu-sung. About  $2\frac{1}{2}$  miles south-east of Liu-ho-k'ou a creek is crossed by a stone bridge 40 feet long; 2 miles further to the south-east is another creek crossed by a wooden bridge also 40 feet long; and at Tien-êrh-chai is found the stone bridge over the Sa-tung Creek.\* The width of all three structures is only about 5 feet, and before guns could pass they would need both widening and strengthening.

The other land routes leading from the landing places to Shanghai or the Wu-sung defences all pass through Yüeh-p'u-chêng.† They are unpaved wheelbarrow tracks from 2 to 4 feet wide, and impassable for guns.

As in the case of a landing east of Shanghai, reliance should be placed on water transport for the conveyance of large quantities of stores, but if it is intended to make an advance without heavy baggage, wheelbarrows or coolies can be used. There may be much difficulty in finding these. Most villages could supply only one or two barrows, although 10 might perhaps be found in Liu-ho-hsin-chêng, and 50 in Liu-ho-lao-chêng, but the time required to collect this class of transport would remove all possibility of the

\* See page 31 (Tien-êrh-chai).

† Map 2 in "Defences of the Yang-tzü Region," shows the roads in the vicinity of Wu-sung.

subsequent advance coming as a surprise. If carrying poles were brought with the troops, bearers could probably be impressed from the nearest villages, but too much reliance should not be placed on any form of transport other than boats.

The following table shows the distances from the landing places :—

| To                        | Road or water. | Route <i>via</i> —                | From Liu-ko-k'ou. | From Tien-êrh-chai. |
|---------------------------|----------------|-----------------------------------|-------------------|---------------------|
| Nan-ssü-t'ang ...         | Road ...       | Sea-wall ...                      | 15½ miles.        | 7½ miles.           |
| ... ...                   | Road ...       | Yüeh-p'u-chêh...                  | 18                | 9½                  |
| Shanghai (Garden Bridge). | Road ...       | Yüeh-p'u-chêh...                  | 38                | 30                  |
| " "                       | Water          | Lo-tien-chêh, Chia-ting Hsien and | ...               | 42                  |
| " "                       | Water          | Lo-tien-chêh, Chia-ting Hsien.    | ...               | 52                  |
| " "                       | Water          | Chia-ting Hsien, and Ta-ch'ang.   | 56                | ...                 |
| " "                       | Water          | Ta-ch'ang ...                     | 58                | ...                 |
| " "                       | Water          | Ta-ch'ang, Three Waters.          | 75                | ...                 |

(c.) *Cha-p'u.*

*General observations.*—*Cha-p'u* will not, under ordinary circumstances, form so convenient a landing place as will the coast to the east of Shanghai, but its position with regard to the Shanghai—Kashing—Hangchow Railway may, in the future, render it a suitable point from which to launch a raid against the line. Although the town is not in the province of Chiang-su, any operations from *Cha-p'u* are likely to be so closely involved with others inside the boundary that some notice of it is necessary here.

*Landing places.*—All possible landing places are commanded by hills at close range, and trenches already exist at some points, having been made during the Japanese War of 1894-95. It is, however, unlikely that artillery will be found in position on the hills, and ships should be able to bring their fire to bear against them at a range of 2,000 yards. Close to the town, however, are found a fort and battery, and in these are mounted guns which may have to be reckoned with.

The best place for a landing would appear to be between the points A and B on Map No. 6. Ships can here approach to within half a mile from the shore, which here for about 1,500 yards consists of hard sand and mud, easy to walk over. Inland for 600 or 700 yards extends an area of flat ground,

cultivated in some places and marshy in others. It is dotted with a few huts, and is intersected by a muddy creek, 4 feet wide, but presenting no great obstacle, as in one place it is spanned by a wooden footbridge, whilst in others banks of earth have been pushed out until they almost block the creek.

This landing place is not visible from the 518-ft. hill, but is commanded by Height C and the hills to the north. Next to the 518-ft. hill, Height C appears to be the highest point in the vicinity, and its occupation by a covering party should ensure that the landing is carried out without interruption. Like all the other hills of the range, Height C is steep and rocky, and is covered with dry grass which in winter is 1 or 2 feet high. Its steepness is sufficient to prevent infantry from climbing it with any speed, but is the cause of much dead ground, and should allow artillery to fire on the crest of the hill until the last few moments of the attack. Large stones on the hillside will give cover for an assaulting column.

A path leads from the landing place over a low saddle, whence it turns to the west and follows the foot of the hills to Cha-p'u, a distance of about 4 miles. It is practicable for horses or wheelbarrows.

*Fortifications at Cha-p'u.*—The battery marked on the map is of brick on a stone foundation. Three guns can be seen, two being apparently of the nature of field guns, whilst one is larger; but it is probable that all are old and that their value is very small. They can only fire in a westerly direction, their arc of fire to the south being cut off by a temple. The only obstacle to the capture of the battery is a brick wall two or three feet thick.

The fort shown on the map stands in a low gap, and mounts one heavy gun in an emplacement of stone and concrete.\* The calibre is probably about nine inches. The gun is protected from the weather by a shed which can be run out of the way on rails. About 100 shells are kept in a small magazine on the east side of the emplacement. The garrison consists of about 40 local men, who live in a mud-walled enclosure immediately west of the gun. The piece is said to have been in position for 20 years, and its value is probably not great; it can fire only to the south and south-east.

*Transport for an advance.*—There may be some difficulty in finding transport at Cha-p'u itself. The waterways will prove the best means of communication, but launches do not run between Kashing, P'ing-hu Hsien, and Cha-p'u owing to insufficient depth of water, and none are likely to be found at any of the above places. The total number of boats at Cha-p'u is not great, only about 70 craft having been counted, the average length being from 15 to 20 feet, and the average beam from 4 to 6 feet. There are very few large vessels. At P'ing-hu Hsien, however, which is eight miles by water from Cha-p'u, several hundred boats, both large and small, can be found.

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\* The Chinese authorities have been considering the question of removing his gun to Kiangyin.

The distances by water from Cha-p'u are as follows :—

|             |     |     |     |     |           |
|-------------|-----|-----|-----|-----|-----------|
| To Shanghai | ... | ... | ... | ... | 63 miles. |
| „ Soochow   | ... | ... | ... | ... | 62 „      |
| „ Kiangyin  | ... | ... | ... | ... | 118 „     |
| „ Chinkiang | ... | ... | ... | ... | 170 „     |

## 2. THE COAST OF NORTHERN CHIANG-SU.

Such information as is available points to the impossibility of landing on the coast of Northern Chiang-su between the mouth of the Yang-tzü and that of the Yang-k'ou Ho, the river on which stands Yen-ch'êng Hsien.

Yen-ch'êng Hsien and Fu-ning Hsien are both connected with the sea by rivers which can be ascended by sea-going junks, but as landing places for an expedition coming from overseas they may be neglected. The only suitable points at which a disembarkation could be effected are—

- (a.) At Hsin-p'u, the port of Hai Chou.
- (b.) At Hsia-k'ou, the port of Ch'ing-k'ou.

### (a.) *Hsin p'u.\**

*General observations.*—The town of Hsin-p'u will be found described in the Gazetteer of the Military Report on Northern Chiang-su. It stands at the junction of the Yen Ho with a tidal river called the Hai-chou Ho, or sometimes the Ch'ao Ho (Tidal River). The Yen Ho is not tidal. Sea-going junks ascend the Hai-chou Hou, which is 150 to 200 yards wide, but although a steamer has been known to come up the river and anchor at Hsin-p'u, a distance of 11 miles from the sea, it will not be safe for vessels of any size to attempt the ascent unless they are prepared to take the ground at low water.

*Opposition to be expected.*—The VII. Division of the Lu Chün, about 4,500 strong, is quartered at Ch'ing-chiang-p'u, which is only 79 miles from Hsin-p'u, and it is probable that resistance may be offered to any attempt to land in this neighbourhood. The country near the coast is very flat and marshy, being almost entirely devoted to the production of salt, and the numerous creeks will render an advance very difficult. Many defensive positions can be found which have their front well covered by natural obstacles, and at the same time possess a good field of fire.

Hsin-p'u itself is chiefly composed of mud houses, but the Customs building and the police station are high brick buildings, and command the part of the river where steamers would anchor if they came right up to the town. The two mills described in the Gazetteer would, however, form the principal points whence resistance is to be expected ; against infantry they could hold out for a long time, although they could soon be rendered untenable by artillery. Using the houses of the town as cover, fire can be brought to bear on the mills at ranges of 300 to 400 yards, but the

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\* Map No. 5. The Hsin-p'u shown on Map No. 1 is not the town referred to here.

attack will have to cross the Yen Ho as well as the moat surrounding the mills. The Yen Ho is spanned by two bridges and the moat by three. Except on the town side of the mills, there is very little cover for an attack.

*The disembarkation.*—If the expedition can be brought on board sea-going vessels of a draught sufficiently shallow, the best plan will be to steam up the river and disembark at Hsin-p'u itself; but at neap tides in the low-water season vessels exceeding 8 feet in draught cannot reach the town, and at no time will it be possible for a steamer drawing over 12 feet. A great deal of time will be saved by landing at Hsin-p'u, and the ships can enter the river in any weather, whereas a landing in boats will be impracticable in a strong wind. Many steamers trading on the China coast could be got down to a draught of 10 feet or even less, and the extra trouble involved by using ships which can ascend the river will be well repaid by the ease with which the landing can be effected.

There are no wharves or piers at Hsin-p'u, but near the Customs building there is deep water for a short distance, and there seems little reason why steamers should not anchor anywhere, resting on the mud at low water. Jetties can be extemporized from the numerous junks which will always be available.

If the ships cannot reach Hsin-p'u, either owing to lack of water or to resistance by the Chinese, the best place to anchor will be near Nai-nai Shan, an island about 7 miles N.N.E. of the mouth of the river, the depth varying from  $1\frac{1}{2}$  to  $4\frac{1}{4}$  fathoms. From the anchorage to Hsin-p'u is a distance of 18 to 19 miles, and boats will have to be used to carry the troops. As in the case of a landing near Shanghai, it will be found advisable to bring boats with the expedition, and also steam launches for towing purposes, but fishing vessels can be found on the coast, and some of these could doubtless be captured.

The distance of the anchorage from the mouth of the river will render landing here a slow process, and in bad weather it may prove impossible, especially if the wind is anywhere between north-east and south-east. On the coast and for 4 miles inland the mud is so soft and the country so swampy that a landing will be very difficult, and the best plan will be for the boats to carry the troops the whole distance to Hsin-p'u; but this must depend upon the opposition encountered. The lowest place at which a landing can be effected with any ease is Ssü-fên, which is 4 miles from the mouth of the river and 7 from Hsin-p'u; but even at this point the country is much cut up by creeks. In any case, the landing should be made as near Hsin-p'u as possible, and preferably on the right bank of the river, because it is on this bank that Hsin-p'u lies, and on the left bank the stream on which Sha-t'ou is situated forms a serious obstacle. Even in the neighbourhood of Hsin-p'u itself it is not possible to move with ease except by following the paths; but above a point opposite the mouth of the Sha-t'ou stream the right bank is free from any creeks which it will be difficult to cross in the dry season.

The two mills should form the first objective of a landing party, as they are easily defensible, and the flour mill, the more westerly of the two, contains large supplies of wheat and flour. It is possible that these supplies may be destroyed to prevent them from falling into the hands of an invader; but the mills are owned entirely by Chinese, among the proprietors being some high officials, and there will be much hesitation before the heavy loss is incurred. The two mills will provide accommodation for about 1,500 men.

*Supplies and water.*—Except for the wheat and flour, supplies can be obtained in small quantities only, and there is no drinkable water at Hsin-p'u. Water is brought either from P'an-p'u, a distance of 12 miles, or from Yün-t'ai Shan, which is 8 miles away. Water must therefore be brought aboard the ships unless arrangements can be made for condensing the river water.

*Lines of advance from Hsin-p'u.*—Ch'ing-chiang-p'u being the head-quarters of the 7th Division, and being moreover on the Grand Canal, will be the first point to which an invader must advance after landing at Hsin-p'u.

Three routes are available—

- (1.) A land route *via* Hai Chou, Wu-chi, and Ch'ien-chia-chi, a distance of 79 miles.
- (2.) A water route by the Yen Ho, 95 miles.
- (3.) A water route up the Hai-chou Ho (also called Ch'iang-wei Ho) to Tang-chien; thence by the Ch'ai-mi Ho eastward to the Yen Ho, and thus to Ch'ing-chiang-p'u, a total of 126 miles.

The land route (No. 1) is much the shortest of the three, and since more than 200 wheelbarrows can be obtained at Hsin-p'u or in the surrounding country, the land route will be found the quickest if a rapid advance on Ch'ing-chiang-p'u is found to be desirable, and the troops carry with them only light baggage.

Numerous boats of from 6 to 30 tons burden are available for the water routes. Of these No. 3 is only navigable in the high-water season, from May to September inclusive, and as it is much longer than No. 2 the latter will be found the best unless there are special reasons to the contrary.

No. 2, the Yen Ho Canal, is longer than the land route, and from October till May has the further disadvantage of being divided into two parts by an earthen dam at Yen-chia-ma-t'ou, 66 miles from Hsin-p'u. All stores would have to be trans-shipped at the dam, or, if the Chinese had removed all craft from that part of the Yen Ho lying south of Yen-chia-ma-t'ou, it would be necessary to haul the Hsin-p'u boats across the dam, involving a large expenditure of time and labour. Moreover, all the rivers flowing from the Yen Ho to the sea are cut off from the Yen Ho by dams, so that sufficient water can be retained in the canal even during the dry season. It would be a very simple operation to cut the dams, and during the dry season the result would probably be to render the Yen Ho unnavigable, and in places to drain it

completely. In the high water season it is doubtful whether cutting the dams would have much effect on the level of the water, but the contingency must always be reckoned with. The same difficulty occurs in Route 3, which joins the Yen Ho only 35 miles from Hsin-p'u.

*Advance from Ch'ing-chiang-p'u to the Yang-tzü.*—From Ch'ing-chiang-p'u the best line of advance to the Yang-tzü is provided by the Grand Canal, which is regularly navigated by steam launches. The distance is 108 miles. Here again it is necessary to reckon with the possibility of the canal being rendered unnavigable by opening the flood gates or cutting the embankments, but since the country to the east, and especially the Hsia-ho district, is at a level much lower than that of the canal, the result of letting out the water will be to flood large districts and drown many of the inhabitants, and it is therefore possible that the authorities may hesitate before taking this responsibility.

In case it should not be possible to use the canal for water transport, there is a wheelbarrow path along the bank, except for the  $1\frac{1}{2}$  miles where the canal runs through the Shao-pai Hu from Liu-cha, 8 miles north of Yang-chou Fu. To cross this lake boats will always be required. From Ch'ing-chiang-p'u to Liu-cha the path is on the east bank of the canal, and if the embankment is cut to let out the water, the path will be interrupted wherever an opening is made.

East of the Grand Canal the country is so much cut up by rivers and canals that an advance by land would be very difficult, but practicable waterways exist. From Huai-an Fu the Shê-yang Ho leads to Fu-ning Hsien, and the Ta-shih-wan Ho to Yen-ch'êng Hsien. From both these places communication exists with the Li Ho and Yang-tzü,\* and without going so far east it is probable that a way could be found through Hsing-hua Hsien to T'ai Chou. Any of these routes, however, would bring an invader to the Yang-tzü below the Chinkiang defences instead of above them, so that he would lose one of the chief advantages of landing in the north of the province, and there is still the danger that the waterways may be obstructed. It would seem to be a better plan to march S.S.W. by land from Ch'ing-chiang-p'u, *via* T'ien-ch'ang Hsien and Liu-ho Hsien, to P'u-k'ou, but no information is available as to this route.

#### (b.) *Hsia-k'ou*.†

*General observations.*—Hsia-k'ou is the port of Ch'ing-k'ou, from which place it is distant  $3\frac{1}{2}$  miles. The Hsia Ho here enters the sea; it is from 10 to 15 yards in width, and at spring tides the depth of water is sufficient to allow junks drawing 7 feet to reach Hsai-k'ou, but at neap tides the depth at high water is only

\* Communication between the Li Ho and the Yang-tzü is uncertain except at the high water season.

† The name may also be pronounced "Chia-k'ou," but "Hsia-k'ou" is the local pronunciation.

5 or 6 feet. At low tide the river is nearly dry, and all vessels have to lie on the mud. Above Hsai-k'ou there is so little water that even small boats cannot reach Ch'ing-k'ou. When the draught of junks is so great as to prevent them from entering the river, they anchor at a distance of 1 or 2 miles from the shore, and their cargo is transferred by means of boats. Eighty junks were counted at Hsai-k'ou in March, 1908, while 60 more were at anchor outside.

*The disembarkation.*—For a landing at Hsia-k'ou the best anchorage is near the island of Nai-nai Shan, which is distant about 7 miles to the E.N.E. Here depths of from  $1\frac{1}{2}$  to  $4\frac{1}{4}$  fathoms are to be found. From the anchorage to Hsia-k'ou the troops must be carried in boats, and although a certain number of fishing and cargo junks can probably be captured, it will be found more satisfactory for the ships to bring the necessary boats, and, if possible, launches to tow them. The coast here consists of soft mud flats, and a landing on the shore itself will be difficult, if not impossible. It will be necessary to follow the Hsia Ho as far as Hsia-k'ou, but there are tortuous channels outside the actual mouth, and local knowledge will be found useful. At Hsia-k'ou there is no difficulty in getting ashore from boats, either by means of planks laid from the gunwale or merely by jumping.

The Chinese troops available to oppose a landing would be the same as in the case of Hsin-p'u. The country round Hsia-k'ou is fairly well cultivated, and is quite flat and open. There is little to hinder the movement of troops, except the soft mud which lies between Hsia-k'ou and the sea, and is covered with water at spring tides.

#### *Comparison of Hsin-p'u with Hsia-k'ou.*

Provided that steamers can be found of a draught light enough to admit of their proceeding up the Hai-chou Ho to Hsin-p'u, that port will be found far more convenient than Hsia-k'ou. But if on the other hand it is not possible to ascend the river, and the expedition is forced to anchor near Nai-nai Shan, the distance for which the troops must be carried in boats will be about 19 miles in the case of Hsin-p'u, and about 7 in that of Hsia-k'ou. The space of open sea to be crossed is almost the same in each case. If, however, Ch'ing-chiang-p'u is the first objective, a force landed at Hsia-k'ou will have to pass through Hsin-p'u on its way, and will therefore have an extra 22 miles to march by road. The tactical conditions are much the same in each case, except that at Hsia-k'ou the country is not much intersected with creeks and ditches, and is therefore more easily passable than in the neighbourhood of Hsin-p'u.

## APPENDIX.

## ROUTES BETWEEN SHANGHAI AND THE COAST TO THE EASTWARD.

The local pronunciation is given first. The names in parenthesis are in the Pekingese pronunciation.

*List of Routes.*

| — | Land<br>or<br>water. | From                                      | To                            | Viâ  | Distance<br>in<br>miles. |
|---|----------------------|---|-------------------------------|--|--------------------------|
| A | W.                   | Pa-lung-kang<br>(Pai-lung-chiang).        | Shanghai                      | ...<br>Hsiao-wan,<br>Tsang-kang-za<br>and Pai-lien-ching.  | 23                       |
| B | W.                   | „ „ „                                     | „                             | ...<br>Hsiao-wan, Lo-ka-hang (Liu-chia-hang) and Tung-kou. | 23½                      |
| C | L.                   |   |                               | —  | 17 or 20                 |
| D | L.                   | Point 1 mile<br>north of Kiu-toan Beacon. | „                             | ...<br>—   | 14 or 17                 |
| E | W.                   | Ts'a-ka-lu<br>(Ts'ai-chai-lu)             | „                             | —  | 12                       |
| F | L.                   | So-ko-lu<br>(Ts'ao-chia-lu)               | „                             | —  | 13                       |
| G | L.                   | Ts'êñ-sho T'ing<br>(Ch'uan-sha T'ing)     | Ts'a-ka-lu<br>(Ts'ai-chia-lu) | —  | 7                        |
| H | W.                   | „ „ „                                     | Shanghai                      | ...<br>—   | 19                       |

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE A.—(WATER ROUTE.)

From Pa-lung-kang (Pai-lung-chiang) to Shanghai ; *via* Hsiao-wan, Tsang-kang-za and Pai-lien-ching.

*Authority and date*—Major H. R. Davies.  
2nd and 3rd December, 1906.

*Epitome.*

General direction, west. Distance, 23 miles.

1. This is the most direct water route between the landing place at the mouth of the Pa-lung-kang (Pai-lung-chiang) Creek and Shanghai. For an alternative, only  $\frac{1}{2}$  mile longer, which turns off at Lo-ka-za (Lu-chia-chai) at  $8\frac{1}{2}$  miles, *see* Route B.

2. It is a water route, except that in two places, viz., Pa-lung-kang flood-gate and Ling-ka-mo-tou, boats would have to be taken out and hauled overland, in the first case for 30 yards, and in the second case for 70 yards.

3. From Ling-ka-mo-tou (Lin-chia-ma-t'ou) a wide waterway leads into a creek running from Ts'ê-n-sho T'ing (Ch'u-an-sha T'ing) northward along the remains of an old sea-wall. After following this north for a mile, the route turns off westward, again joining the main Shanghai—Ts'ê-n-sho (Ch'u-an-sha) creek at Yang-ka-mu-chiao (Yang-chia-mu-ch'iao) at  $13\frac{1}{4}$  miles, then following this creek to its mouth at Pai-lien-ching, and from thence down the Huang-p'u River. The creek becomes tidal at Tsang-kang-za (Chang-chiang-cha) at  $10\frac{1}{4}$  miles, the total rise and fall being here about 1 foot. (A tide of a few inches is felt for 2 miles east of this.) Between Ssü-tung-chiao (Shui-tung-ch'iao) at  $5\frac{1}{4}$  miles and Yang-ka-mu-chiao (Yang-chia-mu-ch'iao) at  $13\frac{1}{2}$  miles, there is a sluggish current flowing westwards.

4. The width of the creek is smallest between Ssü-tung-chiao (Shui-tung-ch'iao) and Yang-ka-mu-chiao (Yang-chia-mu-ch'iao). It here averages 10 yards across, and is in one place only 6 yards wide.

5. The least depth in the non-tidal part in December is 3 feet in Hsiao-wan at  $4\frac{1}{2}$  miles, and 3 feet in Wang-ka-kang (Wang-chia-chiang) at 6 miles. In summer floods there should be 2 feet more water than this. The least depth in the tidal part is  $2\frac{1}{2}$  feet at low water in Tsang-kang-za (Chang-chiang-cha) at  $10\frac{1}{4}$  miles. This should be  $3\frac{1}{2}$  feet at high water.

6. The average depth of the creek is from 4 to 6 feet in December.

7. Bridges across the creek are numerous, averaging three to every 2 miles. The lowest is a stone-slab bridge in Wang-ka-kang (Wang-chia-chiang), which is 8 feet above the water ; a stone-slab bridge at Tsêng-fang-chiao is  $8\frac{1}{2}$  feet. These heights would be 2 feet less in summer flood.

8. Towing from the bank is practicable most of the way, unbridged side streams not being numerous except between Ling-ka-mo-tou (Lin-chia-ma-t'ou) and Tsêng-fang-chiao (Chuan-fang-ch'iao). Whilst passing through big villages such as Hsiao-wan, Wang-ka-kang (Wang-chia-chiang), Tsang-kang-za (Chang-chiang-cha) and Pu-ts'a (Pei-ts'ai), towing would be impracticable, as the houses are built close down to the water.

From Tsêng-fang-chiao (Chuan-fang-ch'iao) at  $4\frac{1}{4}$  miles, as far as the mouth of the creek at Pai-lien-ching, there is a road on or near the bank of the creek.

ROUTE A.—The words "right" and "left" are used with reference to the direction in which the route is described

| Name of stages.                           | Distances.         |                | Remarks.   |
|---|--------------------|----------------|--|
|   | Inter-<br>mediate. | Total.         |  |
| Pa-lung-kang (Pai-lung-chiang) flood-gate | $\frac{1}{2}$      | $\frac{1}{2}$  | From mouth of Pa-lung-kang (Pai-lung-chiang), up the creek, which is here 10 yards wide and $9\frac{1}{2}$ feet deep at high water, 4 feet deep at half tide. Here boats have to be hauled over a sea-wall (a mud bank 20 feet high and 25 feet wide) for about 30 yards. Slope of sea-wall not very steep, and boats could be hauled out on either bank of the creek.   |
| Ling-ka-mo-tou (Lin-chia-ma-t'ou) ...     | $1\frac{3}{4}$     | $2\frac{1}{4}$ | Village of 50 houses. Here is another sea-wall about 20 feet high and 20 feet wide at the top. On arriving at the sea-wall, turn to the right by a creek running parallel with it for 150 yards, and leading to the village. Here it is again necessary to haul boats overland for 70 yards. On the west side of the sea-wall two creeks run into Ling-ka-mo-tou. It is the most northerly of these two that must be taken. This creek turns southwards down the west side of the sea-wall for about 100 yards, so that the head of this creek and the head of the creek from Pa-lung-kang are almost opposite each other, one on each side of the sea-wall. After hauling over, the creek followed soon deepens to 4 feet and then to 6 feet. It is at first 10 yards wide, but afterwards widens to 20 or 30 yards. Towing from Ling-ka-mo-tou to Ts'en-fang-chiao (Chuan-fang-ch'iao) would be a great deal interrupted by unbridged side creeks. |

ROUTE A—*continued.*

| Name of stages.   | Distances.                       |                                    | Remarks.  |
|---|----------------------------------|------------------------------------|---|
|   | Inter-<br>mediate.               | Total.                             |   |
| Wang-kang-chiao (Hêng-chiang-ch'iao) ...                          | 1                                | 3 $\frac{1}{4}$                    | Village of 30 houses on left bank, having Catholic church with small tower.   |
| Tsêng-fang-chiao, also called Kuang-sän-chiao (Chuan-fang-chiao). | 1                                | 4 $\frac{1}{4}$                    | Village of 20 houses. Here a creek goes off to the left to Tsêng-sho T'ing (Ch'u'an-sha T'ing). The present route turns sharp to the right under a 3-span stone-slab bridge, 8 $\frac{1}{2}$ feet high in December.   |
| Hsiao-wan ... ... ... ...   | $\frac{1}{4}$                    | 4 $\frac{1}{2}$                    | Village of 300 houses, chiefly along the left bank for $\frac{1}{4}$ mile. Small supplies obtainable, but shops are not good. About 30 boats here in December, 1906. Towing impracticable whilst passing through village. Water 3 feet deep here in December.   |
| Ssü-tung-chiao (Shui-tung-ch'iao) ...                             | $\frac{1}{2}$                    | 4 $\frac{3}{4}$<br>5 $\frac{1}{4}$ | End of village. A creek goes off to the right to Ho-ch'ing. Village of eight houses. A creek goes straight on to Chung-ka-lu (Kung-chia-lu). Present route turns sharp to the left under a 1-span stone-slab bridge. Creek narrows to an average of 8 or 12 yards in width. From here to Tsang-Kang-za (Chang-chiang-cha) there is a gentle current running west. |
| Wang-ka-kang (Wang-chia-chiang) ...                               | $\frac{3}{4}$                    | 6                                  | Market village of 200 houses. Supplies obtainable. Towing interrupted by houses. Some boats procurable here. At entrance to village 3-span stone-slab bridge 8 feet high in December. Catholic church with conspicuous spire called T'ang-wang-ch'iao, visible in this part of route on the left. Alternative creek branches off. See end of this route.          |
| Wang-ka-za (Wang-chia-chai) ...<br>Creek branches ... ... ...     | $\frac{3}{4}$<br>1 $\frac{1}{2}$ | 6 $\frac{3}{4}$<br>8 $\frac{1}{4}$ | A creek going straight on is said to branch off to the left to T'ang-wang-ch'iao. The present route turns sharp to the right,   |

|   |                |                 |  |
|---|----------------|-----------------|--|
| Lo-ka-za (Lu-chia-chai) ... ... ...                           | $\frac{1}{4}$  | $8\frac{1}{2}$  | Village of 40 houses. The creek turns sharp to the left. Here a creek called So-ka Kou (Chao-chia-kou) branches off to the right to the Tung Kou. (See Route A.)                     |
| Wang-ka-za ... ... ... ...                                    | $\frac{1}{2}$  | 9               | Village of 40 houses on left with white Catholic school.   |
| Tsang-kang-za (Chang-chiang-cha) ...                          | $1\frac{1}{4}$ | $10\frac{1}{4}$ | Market village of 400 houses. Supplies obtainable. From here creek becomes tidal with rise and fall of 1 foot. Depth $2\frac{1}{2}$ feet at low water. Towing interrupted by houses. |
| Yang-ka-mu-chiao, or Tung-niu-ko-tsien (Yang-chia-mu-ch'iao). | 3              | $13\frac{1}{4}$ | Village of 30 houses. Here route joins the main creek from Ts'en-sho T'ing (Ch'u'an-sha T'ing) to Shanghai.  |
| Pu-ts'a (Pei-ts'ai) ... ... ...                               | $1\frac{1}{2}$ | $14\frac{3}{4}$ | Market village of 250 houses. Supplies obtainable.   |
| Creek to Tsou-p'u (Chou-p'u-ch'en)                            | $\frac{1}{2}$  | $15\frac{1}{4}$ | A navigable creek goes off to the left to Tsou-p'u. The present route turns sharp to the right.  |
| Ts'a-ka-za ... ... ...  | $\frac{3}{4}$  | 16              | Catholic village of 20 houses.   |
| Lung-wang-miao ... ... ...                                    | $\frac{1}{2}$  | $16\frac{1}{2}$ | Market village of 100 houses, 300 yards away from right bank.  |
| Pai-lien-ching ... ... ...                                    | $3\frac{1}{2}$ | 23              | Village of 50 houses at mouth of creek. On opposite side of Huang-p'u river, here 400 yards wide, is the Kao-ch'ang-miao Fort.   |
| Shanghai ... ... ... ..                                       | 3              | 20              | From here down the Huang-p'u river, which is from 400 to 700 yards wide, and nowhere less than 20 feet deep.   |

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#### ALTERNATIVE.

At  $6\frac{3}{4}$  miles, at a large house called Wang-ka-za (Wang-chia-chai), an alternative creek branches off to the right under a 3-span stone-slab bridge, rejoining the present route at Lo-ka-za (Lu-chia-chai) at  $8\frac{1}{2}$  miles. It passes through the small villages of Wu-ka-chiao and Sêng-ka-lung. The least depth in December was 3 feet, near Lo-ka-za (Lu-chia-chai). The lowest bridge is 8 feet high. Width of creek from 7 to 10 yards. This alternative is 1 furlong shorter than the main route, but unbridged side streams would delay towing. There does not, therefore, seem any object in taking it.

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE B.—(WATER ROUTE.)

From Pa-lung-Kang (Pai-lung-chiang), to Shanghai; *via* Hsiao-wan, Lo-ka-hang (Liu-chia-hang), and Tung-kou.

*Authority and date*—Major H. R. Davies. December, 1906.

*Epitome.*

General direction, west. Distance,  $23\frac{1}{2}$  miles.

1. This is an alternative to Route A. It is  $\frac{1}{2}$  mile longer than A, otherwise it is equally good. It follows Route A to Lo-ka-za (Lu-chia-chai) at  $8\frac{1}{2}$  miles, when it turns to the west along a creek called the So-ka Kou (Chao-chia-kou), which connects the Li-ka Pang (Li-chia-pêng), the creek running from Pa-lung-kang (Pai-lung-chiang) to Shanghai, *via* Pai-lien-ching, with the Tung Kou or Battery Creek. The So-ka Kou was dug deeper about 1891, and was again deepened in 1905. It is passable at low tide throughout by boats of 3-ft. draught. It is tidal throughout, but the rise and fall is only 5 or 6 inches at Lo-ka-za (Lu-chia-chai). Near the Tung Kou end the rise and fall is 3 feet or more.

2. The least depth in winter at low water is  $3\frac{1}{2}$  feet, where it leaves the Li-ka Pang (Li-chia-pêng), 3 to  $3\frac{1}{2}$  feet at Wang-ka-za at 9 miles,  $3\frac{1}{2}$  feet at Lo-lo-ka-za (Lao-lu-chia-chai) at  $9\frac{1}{2}$  miles. After this the average depth is 4 or 5 feet.

3. The lowest bridges are (a) at Sien-lang-tsung-chiao (Chien-lang-chung-ch'iao) at  $15\frac{1}{4}$  miles, where the bridge is  $7\frac{1}{2}$  feet high at high water in winter; (b) a stone-slab bridge at 16 miles, which is  $6\frac{1}{2}$  feet high at high water in winter.

4. The width of the creek averages from 7 to 12 yards. The banks are good for towing, except for the first  $\frac{1}{2}$  mile from Lo-ka-za (Lu-chia-chai), where unbridged creeks would cause delay.

ROUTE B.—The words "right" and "left" are used with reference to the direction in which the route is described.

| Name of stage.                                       | Distances.         |                  | Remarks.  |
|--|--------------------|------------------|---|
|  | Inter-<br>mediate. | Total.           |   |
| Lo-ka-za (Lu-chia-chai) ... ... ...                  | 8 $\frac{1}{2}$    | 8 $\frac{1}{2}$  | General direction, west. See Route A. From the Li-ka Pang (Li-chia-pêng) at Lo-ka-za under a 3-span stone-slab bridge, depth 3 $\frac{1}{2}$ feet at low tide; bridge 8 $\frac{1}{2}$ feet high at high tide. 100 yards beyond this a creek turns sharp to the right, back to Yuang-ka-kang (Wang-chia-chiang). (See Route A, alternative.) The present route turns sharp to the left, and then bends round again to the right. Creek 7 to 10 yards wide. |
| Wang-ka-za ... ... ... ...                           | $\frac{1}{2}$      | 9                | Village, 12-houses and 3-span stone-slab bridge 8 feet high at high water; depth, 3 to 3 $\frac{1}{2}$ feet at low water.   |
| Lo-lo-ka-za (Lao-lu-chia-chai) ... ...               | $\frac{1}{2}$      | 9 $\frac{1}{2}$  | Village of 15 houses and 3-span wooden bridge.  |
| Hou-tao-chiao (Hua-tao-ch'iao) ... ...               | $\frac{3}{4}$      | 10 $\frac{1}{4}$ | Village of four houses and 3-span stone-slab bridge.  |
| Wang-ka-chiao (Wang-chia-ch'iao) ...                 | $\frac{3}{4}$      | 11               | Village of 15 houses and 3-span wooden draw-bridge.   |
| Lo-ka-hang (Liu-chia-pang) ... ...                   | $\frac{1}{2}$      | 11 $\frac{1}{2}$ | Market village of 150 houses and 3-span stone-slab bridge 9 feet high at high water; depth here 4 feet at low water, 6 feet at high water. The land route from Chung-ka-lu to Shanghai crosses here. (See Route D.)   |
| Yi-ka-chiao ... ... ... ...                          | $\frac{3}{4}$      | 12 $\frac{1}{4}$ | Three houses and 3-span stone-slab bridge.  |
| Nêng-sang-ka-chiao (Nan-chang-chia-ch'iao)           | 1 $\frac{1}{4}$    | 13 $\frac{1}{2}$ | Village of 50 houses and a few small shops and 3-span stone-slab bridge.  |
| Pu-sang-ka-chiao ... ... ...                         | $\frac{1}{2}$      | 14               | Village of 10 houses and 3-span stone-slab bridge.  |
| Sien-lang-tsung-chiao<br>(Ch'ien-lang-chung-ch'iao). | 1 $\frac{1}{4}$    | 15 $\frac{1}{4}$ | Village of 25 houses and 3-span stone-slab bridge 7 $\frac{1}{2}$ feet high at high water in winter.  |

ROUTE B—*continued.*

| Name of stage.                        | Distance.          |                 | Remarks.   |
|---------------------------------------|--------------------|-----------------|--|
|                                       | Inter-<br>mediate. | Total.          |  |
| Bridge ... ... ... ... ...            | $\frac{3}{4}$      | 16              | Five-span stone-slab bridge, 6½ feet high at high water in winter. So-ka Kou runs into Tung Kou just below this. |
| Mouth of Tung Kou (Battery Creek) ... | $1\frac{1}{2}$     | $17\frac{1}{2}$ | Tung Kou or Battery Creek runs into Huaug-p'u river.   |
| Shanghai (Custom House Jetty) ...     | 6                  | $23\frac{1}{2}$ | Up the Huang-p'u River, which is navigable here for large ships.   |

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE C.—(LAND ROUTE).

From Pa-lung-kang (Pai-lung-chiang) to Shanghai.

*Authority and date.*—Major H. R. Davies. December, 1906.

*Epitome.*

General direction, west. Distance: To the Huang-p'u River opposite eastern part of Shanghai, 17 miles. To Custom House, Shanghai, 20 miles.

1. This is the shortest route to Shanghai from the landing place at the mouth of the Pa-lung-Kang Creek (Pai-lung-chiang), but it is 3 miles longer than the route to Shanghai from the landing place at the point north of the Kiu-toan surveying beacon (Route D).

2. The road is passable for wheelbarrows and horses, but is in most parts so narrow as to necessitate marching in single file.

3. The nearest places where wheelbarrows are likely to be obtained are Ho-ch'ing at  $2\frac{3}{4}$  miles from the landing place, and Hsiao-wan at  $4\frac{1}{2}$  miles. No large numbers are obtainable at these places, perhaps 10 to 20 altogether.

4. The country traversed is flat, full of villages, highly cultivated, and much cut up by creeks.

## ROUTE C.

| Name of stages.                 | Distances.         |        | Remarks.   |
|---------------------------------|--------------------|--------|--|
|                                 | Inter-<br>mediate. | Total. |  |
| Shanghai (Custom House) ... ... | 20                 | 20     | <p>General direction, west. Road passable for horses and wheel-barrows.</p> <p>From the landing place at the mouth of the Pa-lung-kang Creek (Pai-lung-chiang), up the creek to the flood gate at <math>\frac{1}{2}</math> mile. Then turn off to the right through the village of Pa-lung-kang (Pai-lung-chiang, 10 houses). Beyond the village turn to the left again (another road leads straight on), winding about among fields and passing a few houses. The road returns to the creek at Tsang-ka-za at 1 mile, and thence follows the north bank till <math>1\frac{1}{2}</math> miles, where it turns off across fields again to the second sea-wall, a bank 20 feet high and 20 feet wide, at Ling-ka-mo-tou (Lin-chia-ma-t'ou, 50 houses), at <math>2\frac{1}{4}</math> miles. Turn north along the sea-wall to Hê-ch'ing, a market village of about 150 houses at <math>2\frac{3}{4}</math> miles. Here turn off to the west from the sea-wall and follow a winding path to Hsiao-wan, a market village of 300 houses at <math>4\frac{1}{2}</math> miles. From here two alternatives are available to Lo-ka-hang (Liu-chia-hang):—</p> <ol style="list-style-type: none"> <li>(1.) The direct route <i>via</i> Wang-ka-kang (Wang-chia-chiang), a village <math>5\frac{3}{4}</math> miles from the starting point.</li> <li>(2.) The route round to the north <i>via</i> Chung-ka-lu (Kung-chia-lu), which is 7 miles from the start.</li> </ol> <p>No. 2 is the easier to find, and winds less than No. 1.</p> |

*Alternative 1.*—From Hsiao-wan down the left bank of a navigable creek to Ssü-tung-chiao (Shui-tung-ch'iao, 8 houses) at 5 miles. Just before entering this village, cross a side creek, which is the main waterway to Shanghai, by a one-span stone-slab bridge, and continue down its right bank to Wang-ka-kang (Wang-chia-chiang, 200 houses) at  $5\frac{3}{4}$  miles; some supplies are here obtainable. From the middle of this village, turn to the right by a zigzag path across fields, crossing a creek by a three-span stone-slab bridge at Tang-ka-za-chiao (25 houses) at  $6\frac{1}{4}$  miles. Immediately afterwards cross another creek by a similar bridge, and turn down its north bank, passing Wang-ka-za (20 houses) at  $6\frac{3}{4}$  miles, Fän-ka-za (20 houses) at  $7\frac{1}{4}$  miles, and Yuang-ni-mu-chiao (50 houses) at 8 miles. Just before entering this village, turn off to the right by zigzag path among fields to Lo-lo-ka-za (Lao-lu-chia-chia, 15 houses) at  $8\frac{1}{2}$  miles; here a navigable creek called So-ka Kou (Chao-chia-kou) is crossed. Turn north, parallel to this creek, although not always in sight of it, passing Si-po-ka-za (20 houses) at  $8\frac{3}{4}$  miles, Sia-ka-za (15 houses) at 9 miles, Wang-ka-chiao (Wang-chia-ch'iao, 15 houses) on the So-ka Kou at  $9\frac{3}{4}$  miles, and Lo-ka-hang (Liu-chia-hang, 150 houses) at  $10\frac{1}{4}$  miles. From here it is  $5\frac{3}{4}$  miles to Yang-ching and  $9\frac{3}{4}$  miles to the Custom House at Shanghai. (See Route D.)

*Alternative 2.*—From Hsiao-wan northwards along the old sea-wall, passing Ssü-tung-chiao (Shui-tung-ch'iao, 8 houses) at 5 miles, Tu-wän (Ta-wan, 20 houses) at  $5\frac{3}{4}$  miles, Si-ka-lu (12 houses) at  $6\frac{1}{4}$  miles, and reaching the middle of Chung-ka-lu (Kung-chia-lu, 350 houses) at 7 miles. From here it is  $3\frac{3}{4}$  miles to Lo-ka-hang (Liu-chia-hang),  $9\frac{1}{2}$  miles to Yang-ching, and  $13\frac{1}{2}$  miles to the Custom House at Shanghai. (See Route D.)

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE D.—(LAND ROUTE).

From landing place at point one mile north of Kiu-toan Beacon to  
Shanghai.

*Authority and date*—Major H. R. Davies. December, 1906.

*Epitome.*

General direction, west. Distance: To Huang-p'u River, opposite eastern part of Shanghai, 14 miles. To Custom House, Shanghai, 17 miles.

1. This is the shortest road by which Shanghai can be reached from the sea. It is passable for horses and wheelbarrows, but not for other wheeled vehicles. The greater part of it is too narrow for infantry in any formation but single file.
2. The nearest place where wheelbarrows are likely to be obtained is Chung-ka-lu (Kung-chia-lu),  $3\frac{1}{2}$  miles from the landing place. Here, perhaps, 10 to 20 would be procurable.
3. The country traversed is flat, full of villages, highly cultivated and much cut up by creeks.

ROUTE D.—The words "right" and "left" are used with reference to the direction in which the route is described.

| Name of stages.                   | Distances.         |        | Remarks.  |
|-----------------------------------|--------------------|--------|---|
|                                   | Inter-<br>mediate. | Total. |   |
| Shanghai (Custom House) ...   ... | 17                 | 17     | General direction, west. Road passable for horses or wheelbarrows. From the landing place at the point north of Kiu-toan Beacon, go westward for $\frac{1}{4}$ mile on to the sea-wall, a bank 20 feet high and 12 feet wide at the top. Along this sea-wall to the north, crossing by a 3-span wooden bridge a small stream which runs into the sea just north of the landing place. 300 yards beyond this bridge, turn off the sea-wall by a path leading westward across cultivated ground. (There are many other paths leading west from the sea-wall near this point, all going towards Chung-ka-lu (Kung-chia-lu), but the path here indicated is the most direct.) At 2 miles the second sea-wall is crossed; this is a bank 20 feet high and 15 feet wide. Road continues west to Chung-ka-lu (Kung-chia-lu, 350 houses), at $3\frac{1}{2}$ miles; some supplies are obtainable, and some wheelbarrows can be got. Turning to the right up the main street for 25 yards, the road again turns to the left (west), crossing a creek by a bridge and going along the right bank of a small side creek. It leaves this creek at 4 miles, turning to the right past a few houses and then sharp to the left again, passing Vän-ka-hang (12 houses) at $4\frac{1}{4}$ miles, and turning down the left bank of a creek with Sieh-ka-kang (Hsüeh-chia-kang), a long village of 15 houses, on the right. At 5 miles it crosses a creek by a 3-span wooden bridge into Lo-ka-za (Liu-chia-chai, 15 houses), and after winding about |

ROUTE D—*continued.*

| Name of stages.                            | Distances.    |        | Remarks.   |
|--|---------------|--------|--|
|  | Intermediate. | Total. |  |
| Shanghai (Custom House)— <i>continued.</i> |               |        | among fields, crosses another 3-span wooden bridge into a village also called Lo-ka-za (15 houses) at 6 miles. Hence down the right bank of a creek, crossing at $6\frac{1}{4}$ miles to the left bank by a 3-span stone bridge, and recrossing to the right bank by another bridge at Sêng-ka-za (Shén-chia-chai, 15 houses) at $6\frac{3}{4}$ miles. Hence over fields and across a creek by a 3-span stone slab bridge into Lo-ka-hang (Liu-chia-hang, 150 houses) at $7\frac{1}{4}$ miles; some supplies and wheelbarrows obtainable. In the middle of this village crosses a navigable creek called So-ka Kou (Chao-chia-kou) by a 3-span stone-slab bridge. Leaving the village, the road runs along the right bank of a small creek to Sung-tzú-an (10 houses) at $8\frac{1}{2}$ miles. Thence, leaving this creek by a zig-zag path among the fields, it crosses a small creek by a 3-span stone-slab bridge at $9\frac{1}{2}$ miles, and passes several small villages, amongst which is Ung-ka-wän (Wêng-chia-wan, 12 houses) at $10\frac{1}{4}$ miles. At $10\frac{3}{4}$ miles the route is joined by a road from So-ka-lu (Ts'ao-chia-lu), which comes in from the right rear. At $12\frac{1}{2}$ miles a small creek is crossed by a 3-span stone-slab bridge, and at 13 miles Yang-ching is reached, a village of 500 houses, on a creek navigable for boats except at low tide, and $\frac{3}{4}$ mile from the Huang-p'u River. Supplies are obtainable. Crossing this creek in the village by a 2-span stone bridge, Shanghai can be reached by any of the roads shown on Map No. 2, or touch can be got with the Huang-P'u river by |

turning sharp to the right down the left bank of the creek immediately after crossing the bridge, or by going through the village and turning sharp to the right at its further end by a road which reaches the river, at 14 miles, at a point not at present (1907) built over, and lying half-way between the Chinese Engineering Company and the Dutch Oil Company. Here are several jetties, alongside which launches and boats can come.

What is considered the main road goes straight west from the further end of the village to Butterfield and Swire's Wharf (China Navigation Company) at  $16\frac{1}{2}$  miles, where the river, here 700 yards wide, can be crossed by boat.

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE E.—(WATER ROUTE).

From Ts'a-ka-Lu (Ts'ai-chia-lu) to Shanghai.

*Authority and date*—Major H. R. Davies. December, 1906.

*Epitome.*

General direction, W.S.W. Distance, 12 miles.

1. This route follows the Tung Kou, or Battery Creek, down to its mouth, and thence turns up the Huang-p'u River. The creek is not good as a water route ; it has too many sharp turns to allow of launches towing boats, and is very shallow at low tide.

2. The width of the upper part of the creek is from 6 to 10 yards. Near its mouth it widens to 30 or 40 yards.

3. The least depth at low water is between Ts'a-ka-lu (Ts'ai-chia-lu) and So-ka-chiao, at  $1\frac{1}{4}$  miles. Here it is not much over 1 foot at low water and 4 feet at high water.

4. The lowest bridge is a 3-span stone-slab bridge at  $2\frac{1}{2}$  miles, which is 7 feet high at high water.

5. The creek is good for towing from the bank, very little difficulty being encountered in the way of unbridged side creeks.

6. A road on or near the north bank of the creek follows it to its junction with the Huang-p'u River.

ROUTE E.—The words "right" and "left" are used with reference to the direction in which the route is described.

| Name of stages.                    | Distances.         |                 | Remarks.  |
|------------------------------------|--------------------|-----------------|---|
|                                    | Inter-<br>mediate. | Total.          |   |
| So-ka-chiao                        | ...                | 1 $\frac{1}{4}$ | General Direction, W.S.W. Creek at first 7 or 8 yards wide. Very shallow for first 1 $\frac{1}{2}$ miles; in places only 1 to 1 $\frac{1}{4}$ feet at low tide, 4 feet at high water.     |
| Sêng-ka-za                         | ...                | 1 $\frac{3}{4}$ | Village of 10 houses; 3-span stone-slab bridge, 7 $\frac{1}{2}$ feet high at high water.  |
| Bridge                             | ...                | 2 $\frac{1}{2}$ | Village of 10 houses; 3-span wooden liftable bridge, 8 feet high at high water. Depth, 3 feet at low water, 6 feet at high water.   |
| Nêñ-ko-ka-hang (Nan-kao-chia-hang) | ...                | 3               | 3-span stone-slab bridge, 7 feet high at high water. Depth, 3 feet at low water, 6 feet at high water.  |
| So-ka Kou (Chao-chia-kou)          | ...                | 4 $\frac{1}{2}$ | Market town of 350 houses. Two bridges in town; the lowest is a 1-span wooden bridge, 7 $\frac{1}{2}$ feet high at high water. Depth here 3 feet at low water, 5 to 6 feet at high water. |
| Tung-kou (at mouth of creek)       | ...                | 6               | A creek called So-ka Kou goes off to left. <i>See Route B.</i> Village of 50 houses. Customs magazine on left bank.   |
| Shanghai (Custom House Jetty)      | ...                | 12              | Hence up the Huang-p'u River, which is here navigable for large ships.  |

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE F.—(LAND ROUTE).

From So-ka-lu (Tsao-chia-lu) to Shanghai.

*Authority and date.*—Major H. R. Davies. 12th December, 1906.

*Epitome.*

General direction, W.S.W. Distance, 13 miles.

This is one of the main roads connecting Shanghai with the old sea-wall east of that town. So-ka-lu (Ts'ao-chia-lu) is a village of 150 houses on the creek connecting Ts'en-sho T'ing (Ch'uan-sha T'ing) with Ts'a-ka-lu (Ts'ai-chia-lu), which lies at the head of navigation of the Battery Creek (Tung-kou). This connecting creek is not much navigated, having only 1 foot of water except at high spring tides, and the road forms the most direct communication below So-ka-lu (Ts'ao-chia-lu) and Shanghai. It is passable for horses and wheelbarrows, and joins the Chung-ka-lu (Kung-chia-lu)—Shanghai road at Yang-ching.

ROUTE F.—The words "right" and "left" are used with reference to the direction in which the route is described.

| Name of stages.                        | Distances.         |        | Remarks.   |
|--|--------------------|--------|--|
|  | Inter-<br>mediate. | Total. |  |
| Shanghai   ...   ...   ...   ...   ... | 13                 | 13     | General direction, W.S.W. Road passable for horses and wheelbarrows. From the middle of So-ka-lu (Ts'ao-chia-lu) it crosses a creek by a stone bridge, and then follows the right bank of a small creek, passing Tu-ts'a-ka-za (Ta-ts'ai-chia-chai, 25 houses) at $\frac{1}{2}$ mile, So-ka-za (Shao-chia-chai, 12 houses) at $1\frac{1}{2}$ miles, Sien-ka-za (Ch'ien-chia-chai, 10 houses) at $2\frac{1}{4}$ miles, Ching-ka-za (20 houses) at $3\frac{1}{4}$ miles, and crossing a navigable creek called So-ka Kou (Chao-chia-kou) by a three-span stone-slab bridge at Yi-ka-chiao (Hsi-chia-ch'iao, (five houses) at $3\frac{3}{4}$ miles. Hence by zigzag path across fields, passing Ching-ka-pän-chiao (25 houses) at $4\frac{3}{4}$ miles, Chin-ka-za (Chin-chia-chai, a long village of 60 houses), at $5\frac{3}{4}$ miles, and Ching-ka-chiao (Chin-chia-ch'iao, 70 houses and a few shops) at $6\frac{1}{4}$ miles; here the Si Kou, a shallow creek not good for navigation, is crossed by a three-span stone-slab bridge. At 7 miles, after passing the small village of Sén-ka-yen, the road from Chung-ka-lu (Kung-chia-lu) to Shanghai is joined. (See Route D.) From this point it is 2 miles on to Yang-ching, and 6 miles to the Custom House at Shanghai. |

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE G.—(LAND ROUTE.)

From Ts'êñ-sho T'ing (Ch'uan-sha T'ing) to Ts'a-ka-lu (Ts'ai-chia-lu).

*Authority and date*—Major H. R. Davies. December, 1906.

*Epitome.*

General direction, N.N.W. Distance,  $7\frac{1}{4}$  miles.

This road leads along an old sea-wall, alongside which runs a waterway, navigable for boats of about 3 feet draught as far as Chung-ka-lu (Kung-chia-lu); but between that place and Ts'a-ka-lu (Ts'ai-chia-lu) there is barely 1 foot of water except at high spring tides, and the road is therefore the only dependable means of communication. The road is good, running for most of the way on an embankment 15 feet wide. It is passable for horses and wheelbarrows.

ROUTE G.—The words "right" and "left" are used with reference to the direction in which the route is described.

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| Name of stages.                        | Distances.         |                 | Remarks.  |
|--|--------------------|-----------------|---|
|  | Inter-<br>mediate. | Total.          |   |
| Ts'a-ka-lu (Ts'ai-chia-lu) ... ... ... | 7 $\frac{1}{4}$    | 7 $\frac{1}{4}$ | General Direction, N.N.W. Leaving Ts'ên-sho T'ing (Ch'u'an-sha T'ing) by the North Gate, pass through a suburb of 100 houses. The road first runs between two creeks. At $\frac{1}{2}$ mile a bridge is crossed over a channel which leads through the old sea-wall. From here on to Chung-ka-lu (Kung-chia-lu) the creek on the right becomes the main waterway. The road continues through Ts'o-mêng (Ch'ê-mên, 50 houses) at 1 mile, and Tsêن-fang-chiao (Chuan-fang-ch'iao, 20 houses) at 2 miles. Here a waterway goes off to the right to Ling-ka-mo-tou (Lin-chia-ma-t'ou). At 2 $\frac{1}{4}$ miles is Hsiao-wan, a market town of 300 houses. At 2 $\frac{3}{4}$ miles, at Ssü-tung-chiao (Shui-tung-ch'iao, 8 houses), a waterway goes off to the left through Wang-ka-kang (Wang-chia-chiang) to Shanghai (Route A). At 3 $\frac{1}{2}$ miles is Tu-wän (Ta-wan, 20 houses); at 4 $\frac{1}{2}$ miles Chung-ka-lu (Kung-chia-lu), a market town of 350 houses; at 6 miles So-ka-lu (Ts'ao-chia-lu), market town of 150 houses; at 6 $\frac{3}{4}$ miles Ku-ka-lu (Ku-chia-lu), market town of 500 houses; and at 7 $\frac{1}{4}$ miles Ts'a-ka-lu (Ts'ai-chia-lu, 70 houses), standing at the head of the Tung Kou or Battery Creek. |

C

## SOUTHERN CHIANG-SU PROVINCE.

## ROUTE H.—(WATER ROUTE.)

From Ts'êñ-sho T'ing (Ch'uan-sha T'ing) to Shanghai.

*Authority and date*—Major H. R. Davies.  
29th and 30th November, 1906.

*Epitome.*

General direction, west. Distance, 19 miles.

1. This is the main waterway between Ts'êñ-sho T'ing (Ch'uan-sha T'ing) and Shanghai. It leads by a creek to Pai-lien-ching, and thence by the Huang-p'u River. It becomes tidal at Sêng-ssü-kuen-chiao (Ch'êñ-ssü-kuan-ch'iao) at  $4\frac{1}{2}$  miles.

2. Launches sometimes run along this creek, but at low water in winter they should not draw more than 3 feet. Numerous sharp bends render the creek unsuitable for the towing of any large number of boats by a single launch.

3. The width of the creek is from 9 to 15 yards for most of the way, widening out to 30 or 40 yards near the mouth.

4. The least depth in November is  $3\frac{1}{2}$  feet, just short of Sêng-ssü-kuen-chiao (Ch'êñ-ssü-kuan-ch'iao) in the non-tidal part;  $3\frac{1}{2}$  feet at low water at Li-ka-chiao (Li-chia-ch'iao) at 9 miles; 3 feet at low water at Hui-chou-tien at  $7\frac{1}{2}$  miles.

The average depth of the creek at low water is from  $4\frac{1}{2}$  to 5 feet.

5. Bridges across the creek are numerous. The following are the lowest:—(i.) A wooden 3-span bridge at Yang-ka-mu-chiao (Yang-chia-mu-ch'iao) at  $9\frac{1}{4}$  miles, which is 8 feet above the water at high water; (ii.) a 3-span wooden bridge at Hui-chou-tien at  $7\frac{1}{2}$  miles,  $8\frac{1}{2}$  feet high at high water. This latter bridge also has the least span, 19 feet.

6. Towing from the bank is practicable throughout this creek, unbridged side creeks not being numerous.

ROUTE H.—The words "right" and "left" are used with reference to the direction in which the route is described.

| Name of stages.                                 | Distances.         |        | Remarks.   |
|---|--------------------|--------|--|
|   | Inter-<br>mediate. | Total. |  |
| Sêng-ssü-kuen-chiao<br>(Ch'en-ssü-kuan-ch'iao). | 4½                 | 4½     | Starting from the West Gate of Ts'êñ-sho T'ing (Ch'uan-sha T'ing), turn sharp off to the west. This part of creek is not tidal, but is subject to a 2-ft. rise in summer floods. Several small villages are passed.  |
| Hui-chou-tien ...                               | 3                  | 7½     | Village of 20 houses. Creek passes under 1-span stone-slab bridge called Kuang-si-chiao. Here a navigable creek, said to lead to Wang-mien (Hêng-mien-chêñ) and Nêñ-wei Yüien (Nan-hui Hsien), goes off to the left. The present route turns sharp to the right. Just before the turn there is only 3½ feet depth at end of November. The creek now becomes tidal. |
| Yang-ka-mu-chiao (Yang-chia-mu-ch'iao)          | 1½                 | 9½     | Village of 10 houses. Depth of 3 feet at low water in November. 3-span wooden bridge 8½ feet high at high water in November, with 19-ft. span.   |
| Pu-ts'a (Pei-ts'ai)                             | 1½                 | 10½    | Market village of 250 houses. Supplies obtainable.   |
| Creek turns ...                                 | ½                  | 11½    | A navigable creek goes off to the left to Tsou-pu (Chou-p'u-chêñ). The present route turns sharp to the right.   |
| Catholic village                                | ½                  | 12     | Village of 20 houses. No church.   |
| Lung-wang-miao                                  | ½                  | 12½    | Market village of 100 houses, 300 yards away to the right.   |
| Pai-lien-ching ...                              | 3½                 | 16     | Village of 50 houses at mouth of creek.  |
| Shanghai (Custom House jetty)                   | 3                  | 19     | From here down the Huang-p'u River.  |

## SKETCH MAP OF CHIANG-SU.

Scale 1000000 or 1 Inch to 31.56 Miles.



## References.

|  |   |         |   |
|--|---|---------|---|
| Capital of Province                        | □ | NANKING | □ |
| City of 1st Class                          | □ |         |   |
| Chou                                       | □ |         |   |
| Tsao                                       | □ |         |   |
| City of 2nd Class                          | □ |         |   |
| Hsien                                      | □ |         |   |
| Villages                                   | ○ |         |   |
| Telegraph line                             | — |         |   |
| (There are telegraphs along all railroads) | — |         |   |
| Railway open to traffic                    | — |         |   |
| under construction or projected            | — |         |   |
| Light house                                | — |         |   |
| Province Boundary                          | — |         |   |
| Canal                                      | — |         |   |

## Note.

The Longitudes are referred to the Greenwich Meridian.

From Shanghai the following cables run —  
 Northwards German Govt. Cable to Tsin-tau Chinese Govt. Cable to Chih-chu.  
 Eastwards Two Danish Cables to Nagasaki.  
 Southwards British Tel. Co. Ltd. Cable to Foochow R. Danish Cable to Amoy.  
 German-Dutch Cable to Yap L. American Cable to Manila.

# SHANGHAI & NEIGHBOURHOOD

MAP No 2



EXPLANATION

|        |               |
|--------|---------------|
| 鎮城     | Market-town   |
| Chén   | Chéng         |
| 城      | Walled City   |
| Chéng  | Residence     |
| Chai   | House, family |
| Chiang | River         |
| Chiao  | Bridge        |
| Fang   | A row, line   |
| Hu     | Lake          |
| Kou    | Mouth         |
| Ma-tou | Wharf, jetty  |
| Miao   | Temple        |
| Nan    | South         |
| Peng   | Small creek   |
| Shan   | Hill          |
| Seü    | Township      |
| To     | Ferry, ford   |
| Wan    | Crack, cove   |

頭馬廟南浜山司渡灣

G.S.S. N° 2386

## REFERENCE

Cart roads  
Other roads and paths  
Telegraph lines  
Offices  
Post Offices  
Mission Stations (Prot.)  
(1st)  
Railway line, single, with Station  
Tramway line

Scale 126,720 or 1 Inch to 2 Miles

10 Miles

NOTE.—The country is everywhere intersected by creeks, but it is only in the immediate neighbourhood of Shanghai that sufficient data are available to admit of their insertion on the map.

War Office, Dec. 1889  
Ordnance Survey, Southampton, 1901

COUNTRY BETWEEN  
KIANGYIN & HANGCHOW

MAP No. 1.

MAP No. 3.



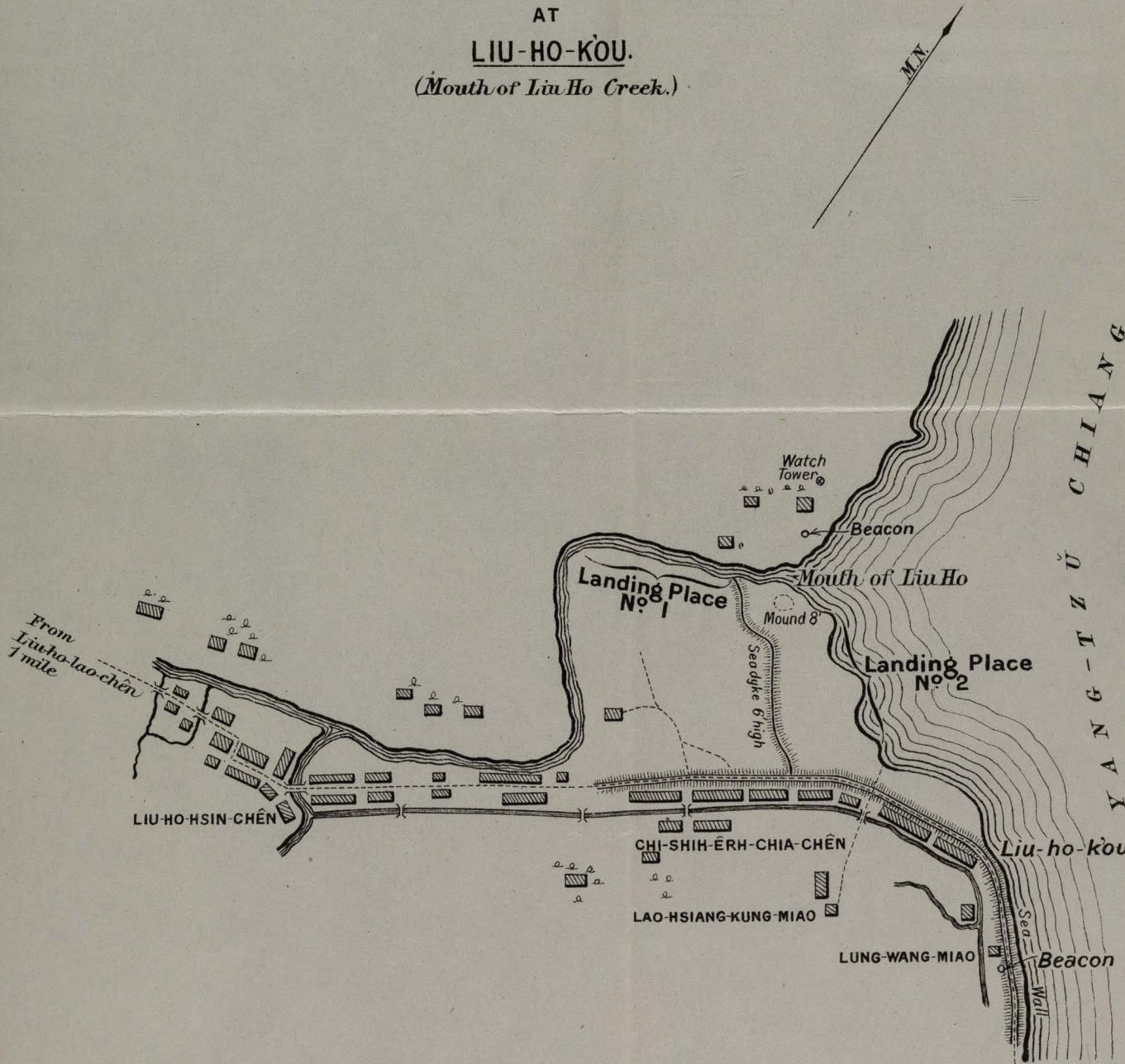
| EXPLANATION |               |
|-------------|---------------|
| Chai        | Residence     |
| Chiao       | Bridge        |
| Chiang      | River         |
| Ch'en       | Market town   |
| Ch'eng      | Walled town   |
| Chuang      | Village, farm |
| Heng        | A row, line   |
| Hsi         | West          |
| Hu          | Lake          |
| Kou         | Mouth         |
| Ma-tou      | Wharf, jetty  |
| Men         | Gate          |
| Miao        | Creek         |
| Peng        | Hill          |
| Shan        | Township      |
| Ssu         | Lake, pool    |
| Tan         | Island        |
| Tao         | Bank, dyke    |
| Ti          | Head          |
| Tou         | Ford, ferry   |
| Tu          | Creek, cove   |
| Wan         | Lake, sea     |
| Yang        |               |

## PROPOSED LANDING PLACES

AT

LIU-HO-KOU.

(Mouth of Liu Ho Creek.)



Scale of Yards 3 1/2 Mile.

500' 4 3 2 1 0 500 1000 Yards

HAI CHOU  
AND  
HSIN-PU  
*And surrounding country.*

